Harmonic Centricity in Philip Glass' "The Grid" and "Cowboy Rock'n'Roll USA," an original composition

by

Matthew Donald Aelmore

B.M., Wichita State University, 2009

M.M., Manhattan School of Music, 2011

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This dissertation was presented

by

Matthew Donald Aelmore

It was defended on

March 26, 2015

and approved by

Marcia Landy, PhD, Professor of English/Film Studies

Eric Moe, PhD, Professor of Music Composition and Theory

Andrew Weintraub, PhD, Professor of Ethnomusicology

Dissertation Advisor: Amy Williams, PhD, Professor of Music Composition and Theory

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This dissertation analyzes the harmonic syntax of Philip Glass' music for the scene "The Grid," from the 1982 Godfrey Reggio film *Koyaanisqatsi*. Chapter 1 focuses on the five harmonic cycles, which are presented in twenty-one harmonic sections. Due to the effects of repetition, Glass' harmonic cycles are satiated from the relationships of consonance and dissonance that characterize tonal harmony. The five harmonic cycles, which appear in twenty-one sections, are analyzed in terms of the type of harmonic centricity they assert: tonally harmonic centricity, contextually asserted harmonic centricity, and no harmonic centricity. The intervallic motion of triads in these harmonic cycles is described by their organization in a symmetrically organized pitch space.

Chapter 2 shows how "The Grid" is organized under a three-part structure due to the constant fluctuation of rhythmic, metric, and orchestrational textures. The fluctuating context of these textures supply the dramatic charge and discharge of textural intensification, which allows for a sense of directional volition in the music that builds and releases between the work's three parts. Special attention is paid to the modulations between harmonic sections, which feature momentary effects of cyclic conjunction and instances of atonal prolongation. The analysis ends by introducing a possible reading of a quotidian narrative of the everyday activities of the late 1970's working class American, based on the interaction of the musical structures described in the analysis and the themes of the imagery used in the film.

The second part of this dissertation is an original composition, *Cowboy Rock'n'Roll USA*, an experimental music theatre production composed through an extensive collaborative process between composer and performers. This piece is scored for soprano, flute, clarinet, country singer, and audio/visual technician and was premiered in Stuttgart, Germany in June 2014.

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ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

The music for "The Grid," a twenty-one minute scene from the 1982 Godfrey Reggio film *Koyaanisqatsi*, is a famous example of Philip Glass' repetitious and tonally ambiguous compositional style. The film had probably the most successful minimalist film score at the time that, coupled with the CBS release of the record *Glassworks* (1982), contributed to Glass' burgeoning status in popular culture–which was ultimately solidified in the following decades through the inclusion of his original scores and licensed music in dozens of mainstream films. Critics have both heralded and abhorred Glass' repetitive music and simplistic tonal vocabulary, but few theorists have attempted to analyze Glass' music and even fewer have provided any working description of its harmonic syntax.

In *Koyaanisqatsi*, Glass and Reggio collaborated to create a film with no dialogue or direct narrative. Reggio's captivating time-lapsed images stream along with Glass' music, which ranges from atmospheric drones of the scene "Microchip," to the driving rhythmic intensity of "The Grid." Glass composed "The Grid" from five harmonic cycles–repeating motions of two or three harmonies that arpeggiate in a constantly fluctuating rhythmic, metric, and orchestrational context. While the harmonic cycles in "The Grid" are triadically based, Glass' use of repetition creates a harmonic syntax that does not follow the conventions of common practice tonality. There is no hierarchical tonal center under which these harmonic cycles relate. Instead, the music progresses through a series of harmonic regions, defined by cycles that assert various types of

harmonic centricity or non-centricity independently. Across these harmonic regions, the fluctuation of rhythmic, metric, and orchestrational textures gradually intensify to climactic peaks that dramatically shift to significantly less complex textures. The dramatic charge and discharge of textural intensification allow "The Grid" to have a volitionally directional form in the absence of common-practice tonal function.

This dissertation is presented in two chapters. First, I will describe the five harmonic cycles in terms of how they assert harmonic centricity. Next I discuss the effects of repetition on the cycle's harmonic voice leading and show how the intervallic motion of triads can be mapped in a symmetrical pitch space. Chapter 1 concludes with a discussion of the aspects of rhythmic, metric, and orchestrational textures that appear in constant fluctuation. Chapter 2 analyzes the large-scale form of "The Grid." Though repetition reduces Glass' harmony to tonal stasis, the charge and discharge of textural intensity allow in the music a dramatic three-part form. This chapter describes effects of local modulations occurring at the intersection of different repeating harmonic cycles within and between the three parts.

Part:	Part I ("Introduction to The Grid")	
Time Code:	0:00-2:26	2:26-3:24
Section:	Section One	Section Two
Cycle:	Cycle 1	Cycle 2
Centricity:	F	Bb7
Centricity Type:	Diatonic Assertion	Contextual Assertion
Role of Ab	None	

Part:	Part II					
Time Code:	0:00-1:07	1:07-2:54	2:54-4:40	4:40-6:19	6:19-8:43	8:43-11:30
Section:	Section Three	Section Four	Section Five	Section Six	Section Seven	Section Eight
Cycle:	Cycle 3	Cycle 4	Cycle 3	Cycle 4	Cycle 3	Cycle 5
Centricity:	(Db-Eb)	(Bb7-Eb7)	(Db-Eb)	(Bb7-Eb7)	(Db-Eb)	Ab / Ab7
Centricity Type:	No Centricity					Diatonic Assertion / Contextual Assertion / (Dominant Charge)
Role of Ab	Ab as Prolongational Salience					Ab as center then gradually charged as dominant

Part:	Part III									
Time Code:	11:30-12:09	12:09-12:37	12:37-13:06	13:06-13:35	13:35-14:04	14:04-14:26	14:26-14:47	14:47-15:09	15:09-15:31	15:31-16:04	16:04-16:34	16:34-17:17	17:17-18:06
Section:	Section Nine	Section Ten	Section Eleven	Section Twelve	Section Thirteen	Section Fourteen	Section Fifteen	Section Sixteen	Section Seventeen	Section Eighteen	Section Nineteen	Section Twenty	Section Twenty-one
Cycle:	Cycle 3	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5
Centricity:	(Db-Eb)	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab
Centricity Type:	No Centricity					Contextual Assertion							
Role of Ab	Ab discharges to Db					Tonal Pairing of Ab and Bb7							

Fig. 1.1 Large-scale Musical Form of "The Grid"

1.1 HARMONIC CYCLES AND HARMONIC CENTRICITY

Figure 1.1 shows the large-scale form of "The Grid" that this dissertation will reveal. I segment "The Grid" into twenty-one sections based on the appearances of five harmonic cycles.[1] These twenty-one sections are organized into three parts based on the dramatic charge and discharge of textural intensity. Textural intensity is charged by the increasingly complex fluctuation of metric and rhythmic figurations, as well as the escalating volume and registration of orchestral groups, that gradually builds through sections and suddenly discharges into a significantly less dense texture. Within these three parts, harmonic cycles "modulate" back and forth using a number of different techniques that will be explained shortly, but first I will introduce the five cycles that make up "The Grid."

[1] The time codes in this paper are derived from *Koyaanisqatsi: Original Motion Picture Score*, released in 2009 by Orange Mountain Music. Given that there is no published score available, time codes are used as

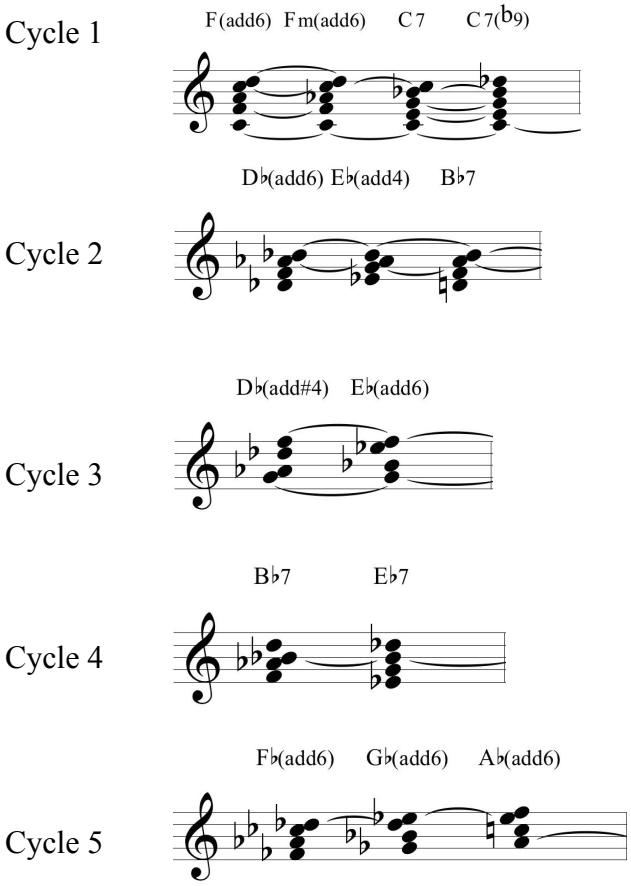

Fig 1.2 The Five Harmonic Cycles of "The Grid

According to Guy Capuzzo, sectional tonality is a principle of formal organization commonly found in rock music in which sections of a song (verse, chorus, bridge, etc.) each contain a unique tonal centricity, the relationships of which cannot constitute an overall harmonic center across sections. Capuzzo provides an example in the Beatles' "Good Day Sunshine," which has four consecutive sections, each with their own tonal center (B-major, A-major, D-major, and C-major). Capuzzo goes on further to delineate sectional tonality from sectional centricity, in which the harmonic centricity of sections is not asserted through

tonic/dominant relationships. Instead, centricity appears, following Daniel Harrison[2], as the contextual assertion of a harmonic center; or, following Christopher Doll's concept of *centric ambiguity*, a section is defined as asserting ambiguous or no harmonic centricity whatsoever and can be described in terms of voice-leading and metric/rhythmic context.[3]

Capuzzo argues that tonic/dominant tonality (Schenkerian tonality or Schoenbergian monotonality) is but one of several *gauges of tonality* such as: implicit tonality[4], double tonality/tonal pairing[5], modified directional tonality[6], directional/progressive tonality[7], and Capuzzo's own sectional tonality and sectional centricity "The Grid" is composed of 21 sections that are defined by five harmonic cycles made of two or three harmonies each. The harmonic cycles that constitute the sections of "The Grid" each assert harmonic centricity in a unique way depending on the relationship between harmonies within cycles, as well as how those harmonies are emphasized metrically.

Cycle 1 is the only cycle in "The Grid" to assert harmonic centricity through tonic/dominant relationships, and it does so in the key of F. The tonic/dominant hierarchy in Cycle 1 is reinforced in the section through the strong, weak, strong metric emphasis that contextualizes the three harmonies: Fmaj-Fmin-C^7. The harmonies in Cycle 2, Db-Eb-Bb^7, do

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[2] Daniel Harrison, *Harmonic Function in Chromatic Music: a renewed dualist theory and an account of its precedents*. Chicago: University of Chicago Press, 1994.
[3] Guy Capuzzo, "Sectional Tonality and Sectional Centricity in Rock Music," *Music Theory Spectrum* 31/1, (2009): 157-174.
[4] Deborah Stein, *Hugo Wolf's Lieder and Extensions of Tonality*, (Ann Arbor: UMI Research Press, 1985); and James Baker, "Scriabin's Implicit Tonality," *Music Theory Spectrum* 2/1 (1980), 1-18.
[5] Harald Krebs, "Alternative to Monotonality in Early Nineteenth-Century Music," *Journal of Music Theory* 25/1 (1981), 1-16; and, "Some Early Examples of Tonal Pairing: Schuberts 'Meeres Stille' and 'Der Wanderer'," in *The Second Practice of Nineteenth-Century Tonality*, ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996), 17-33.
[6] Mark Anson-Cartwright, "Chasing Rainbows: Wolf's 'Phanomen' and Ideas of Coherence," *Journal of Music Theory* 45/2, 233-261.
[7] Stein, *Hugo Wolf's Lieder and Extensions of Tonality.*

not assert any clear tonic/dominant relationship, nor can they be understood diatonically. Instead, Bb^7 is asserted as a harmonic center because of its metric emphasis in a weak, weak, strong pattern (Bb7 is generally twice as long in duration as Db or Eb).

Harmonic centricity can be asserted in the absence of tonal harmonic function. Joseph Straus writes in his *Introduction to Post Tonal Theory*:

> All tonal music is centric, focused on specific pitch classes or triads, but not all centric music is tonal. Even without the resources of tonality, music can be organized around referential centers. A great deal of post-tonal music focuses on specific pitches, pitch classes, or pitch-class sets as a way of shaping and organizing the music. In the absence of functional harmony and traditional voice leading, composers use a variety of contextual means of reinforcement. In the most general sense, notes that are stated frequently, sustained at length, placed in a registral extreme, played loudly, and rhythmically or metrically stressed tend to have priority over notes that don't have those attributes.[8]

Straus' argument for contextually based harmonic centricity, while originally meant to apply to early twentieth century post-tonal music, can easily extend to Glass's repetitively satiated harmonic cycles. The position that harmonic centricity does not depend on diatonic tonality has been extended to analyses of triadically-based music by such authors as Capuzzo[9] and Doll[10]. These authors have applied this position to their work analyzing rock music with harmonic centricity that does not adhere to common-practice harmonic syntax.

According to Harrison, harmonic centricity in post-tonal music is a matter of behavioral harmonic rhetoric. Harrison notes four techniques of tonic assertion: 1.) Tonic function ends a

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[8] Joseph Straus, *Introduction to Post Tonal Theory*, (Upper Saddle River, NJ: Prentice Hall, 2005), 131.
[9] Capuzzo, "Sectional Tonality and Sectional Centricity in Rock Music."
[10] Christopher Doll, *Listening to Rock Harmony*, PhD diss., Columbia University, (2007)

composition, 2.) Tonic begins compositional sections, 3.) Harmonic stasis and immobility attract tonic function, and 4.) Thematic exposition is heard in a tonic context.[11]

The third rhetorical device is what concerns "The Grid." Harrison writes that "some harmonic entity that seems immobile naturally attracts consideration as Tonic and actually can attain that status if other counterbalancing factors–such as position finding–are not at work or are overwhelmed."[12] This sensation of harmonic "immobility" is necessarily dependent upon a rhythmic/metric entrainment that stabilizes one harmony over another. "Immobility" is here a misleading term as it implies that the musical surface itself must be static. Rather, Harrison is describing the effect that arises when a single harmony is durationally or metrically emphasized over others.

Justin London, in his book *Hearing in Time*, contends that rhythm and meter are musical phenomena that are mutually dependent. London's *many meters hypothesis* "moves beyond tempo-metric types [i.e. time signatures] to highly context-specific patterns of temporal expectation that govern our attention to as well as performance of rhythmic sequences. [This is an]…ecologically balanced approach to our metric perception and cognition by recognizing that we acquire our metrical listening habits by listening to real-world, human performances of music."[13] Following the latest research in music cognition and psychology, London defines meter as attentional behavior of listening that is grounded in the perception of a pulse (*tactus*) and entrained by the contextual presentation of a number of "mutually reinforcing oscillations"[14]

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[11] Harrison, *Harmonic Function in Chromatic Music*, 75-81
[12] Harrison, *Harmonic Function in Chromatic Music*, 80-81.
[13] Justin London, *Hearing in Time: Psychologial Aspects of Musical Meter,"* (New York: Oxford University Press, 2004), 7.
[14] London, *Hearing in Time*, 20.

that "involves both the discovery of temporal invariants in the music and the projection of temporal invariants onto the music."[15]

Meter in this regard is a matter of invariance of accent, as an extension of Lerdahl and Jackendoff's model described in *A Generative Theory of Tonal Music*. In Lerdahl and Jackendoff's model, three varieties of accentuation entrain the perception of meter. *Phenomenal accents* "give emphasis or stress in the musical flow… such as sforzandi, sudden changes in dynamics or timbre, long notes, leaps…and so forth". *Structural accents* are "caused by melodic/harmonic points of gravity in a phrase or section". As a result of phenomenal and structural accentuation, *metrical accents* accrue to a "beat that is relatively strong in its metrical context".[16]

The assertion of both diatonic tonality and contextually asserted harmonic centricity is dependent on the phenomenal, structural, and metrical accents that a listener entrains in their perception of the musical surface. In "The Grid," phenomenal accents are apparent in changes of orchestration, rhythmic subdivision, and contour within and between sections that are coupled with the structural accentuation supplied by harmonic rhythm. In Cycle 1, the phenomenal and structural accents create an invariant harmonic rhythm that emphasizes a strong, weak, strong meter. This metric emphasis contributes to the assertion of F as a tonal center, with F-major and C^7 metrically accentuated as strong beats. In Cycle 2, the phenomenal and structural accents emphasize a weak, weak, strong meter that contextually asserts the tonally ambiguous Bb^7 as a harmonic center. Cycle 5 also contextually asserts harmonic centricity through a similar metric entrainment as Cycle 3 and will be discussed shortly.

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[15] London, *Hearing in Time*, 25.
[16] Lerdahl and Jackendoff, *A Generative Theory of Tonal Music*, (Cambridge, Mass; MIT Press, 1983), 17-18.

Cycle 3, Db-Eb, asserts no harmonic centricity. While the harmonies of Cycle 3 could be located in the diatonic space of Ab, the lack of any metric emphasis of one harmony over another in conjunction with the effects of repetition that, as I will argue, satiates these two harmonies away from common practice tonal function and into a harmony defined by voice leading consistency rather than functional consonance and dissonance. Cycle 4 also asserts no harmonic centricity. The harmonies in Cycle 4, Bb7-Eb7, are reciprocating dominant seventh chords of each other. Like Cycle 3, no harmony is metrically emphasized in Cycle 4.

Cycle 5, Fb-Gb-Ab, is like Cycle 2 in that it contextually asserts harmonic centricity through a weak, weak, strong metric emphasis. This cycle, at least in some moments in "The Grid", might sound to have common practice tonal function as the Roman numeral progression bVI-bVII-I in the key of Ab. However, like Cycles 2, 3, and 4, Cycle 5 asserts no hierarchical tonic/dominant relationships. Because harmony in "The Grid" features a repetitive syntax, the relationships of consonance and dissonance that exist in common-practice tonal harmony do not always apply. Repetition in "The Grid" satiates the harmonies in Cycles 2, 3, 4, and 5 away from any implied common-practice tonal function into a locally functional syntax of parsimonious voice leading. I call this effect of repetition *harmonic satiation*.

1.2 HARMONIC SATIATION

Semantic satiation, a term coined by Jakobovits[17], is a psychological phenomenon first described by Severance and Washburn in 1907 in which the repeated viewing, utterance, or hearing of word causes it to temporarily lose semantic meaning, and is instead perceived as a collection of meaningless sounds.[18] Deutsch, Henthorn, and Lapidis' study, "The Illusionary Transformation from Speech to Song," found that when subjects listened to a recording of a complete sentence immediately followed by repeated fragments of a few words of that sentence, the repeated words were heard as singing rather than speaking. When the entire sentence was then played again, the subjects experienced a phenomenally different perception such that it sounded as if the speaker had burst into song in the middle of the sentence.[19]

Repetition has the capacity to transform the spoken word into musical nonsense. While making a one-to-one analogue of linguistics and musical function would be foolish, semantic satiation does provide a useful reference in understanding the effects of repetition on harmonic cycles that exist, but do not function, in tonal space. As the contextually centric (Cycles 2 and 5) and non-centric (Cycles 3 and 4) cycles in "The Grid" are repeated, they are objectified away from tonal function. It is repetition that allows a listener to identify Glass' harmonies as cycles rather than progressions. Most significantly, repetition equalizes the hierarchical relationships of consonance and dissonance that characterize the harmonic syntax of common-practice tonality.

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[17] L.A. Jakobovits, *Effects of Repeated Stimulation on Cognitive Aspects of Behavior: some experiments on the phenomenon of sematic satiation*, (Doctoral diss, McGill University, 1962).
[18] E. Severance and M.F. Washburn, "Minor Studies from the Psychological Laboratory of Vassar College: the loss of associative power in words after long fixation," *The American Jounal of Psychology* 18 (1907), 182-186.
[19] Diana Deutsch, Trevor Henthorn, and Rachel Lapidis, "Illusory Transformation from Speech to Song," *Journal of The Acoustical Society of America* 129/4 (2011).

While the harmonic cycles in "The Grid" are all triadically based, they do not all exhibit the functions of consonance and dissonance found in common practice voice leading. One quality of this Cycle 3 is the use of notes outside of the triad as part of the arpeggio figuration. Consider the keyboard and woodwind part at the beginning of the Part II:

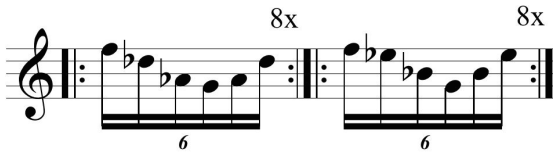

Figure 1.3 Section Three Right-hand Arpeggio

It is easy to see the arpeggiation of D-flat major and E-flat major, but only after recognizing the non-triad tones present: the G in the D-flat major arpeggio and F in the E-flat major arpeggio. In classical counterpoint, such non-chord tones would be analyzed as dissonant neighbor-tones, extraneous to the harmony. When taken as part of a diatonic scale, the added tones, to the eye, belong to an Ab major (or f natural minor) diatonic collection.

Richmond Browne's concept of position finding has relevance to the issue of tonality in this cycle.[20] In position finding, "one relies on the rarity of certain intervals in the diatonic set to determine a tonic." [21] A listener will position a tritone or minor second within the intervallic structure of a diatonic scale. The pitches in the Db and Eb major triads could belong to a number of diatonic collections, but the F and G non-triad tones in this arpeggio suggest Ab major.

[20] Richmond Browne, "Tonal Implications of the Diatonic Set," *In Theory Only 5*, nos. 6-7 (July-August 1981), 3-21.
[21] Browne, quoted in Harrison, *Harmonic Function in Chromatic Music*, 73.

Position finding requires a diatonic field or, as he puts it, "a field underneath the topography of which a diatonic substratum can easily be found."[22] Harrison posits this thesis in the context of finding tonal function in late-Romantic harmony. Chromaticism in late-Romantic music renders position finding impossible, as chromatic alterations obscure any clear diatonic field. Harrison defines tonality in terms of functional charges and discharges between tonic, dominant, and subdominant.[23] In chromatic late-Romantic music, as well as most common practice tonal music, diatonic key centers change as the functional relationships between tonic, dominant, and subdominant are reassigned to triads positioned in another key, a concept originating with Rameau. Furthermore, the tritones and minor seconds present in in Cycle 2 are anything but "rare" in their repetitive presentation.

The Db-Eb arpeggios contain non-triad tones that might serve to confirm the key of Ab major if they appeared as moving parts of a larger progression in common practice tonal music. However this harmonic cycle is repeated eight times over the course of a minute–which is hardly common practice. The pitches of this harmonic cycle may imply a diatonic space, but the repeating harmonies of this cycle does not imply any charge or discharge of sub-dominant function to dominant function.

The harmonic rhythm of this section maintains equal durations between both harmonies even though the harmonic rhythm changes from eight pulses to six pulses after the fourth cycle of Db-Eb. The interjection of the six sixteenth-note subdivision, which adds a dotted-quarter pulse cross rhythm to the larger texture, emphasizes the particular harmony to which it is assigned, but does so equally among each harmony in the last four cycles of the section. There is a minimum of rhythmic and metric variation that would profoundly emphasize one harmony

[22] Harrison, *Harmonic Function in Chromatic Music*, 74.
[23] Harrison, *Harmonic Function in Chromatic Music*, 90-91.

over another or allow the sensation of harmonic charge or discharge that would assign Db or Eb a tonic, dominant, or subdominant function. Harmonic satiation attenuates any sensation of IV-V function to the point of extinction, ridding any expectation that it might "resolve" to Ab.

In conjunction with repetition, the lack of metric emphasis for either harmony in Cycle 2 further equalizes any harmonic tension that would imply subdominant or dominant function. This cycle undergoes a process of harmonic satiation, in which diatonic harmonic function is dominated by the relationships of voice leading as affected by repetition and consistent metric/rhythmic texture. The harmonic cycle satiates into a progression functioning independently from any key and presents no functionally diatonic charge or discharge. Glass has produced triadic harmony that can theoretically exist in a diatonic, or even modal context, but does not function as such.

Following Cohn, harmonic progressions without confirmed diatonic tonal centers do not need to be analyzed *a priori* in terms of diatonic key structures. For Cohn, triads can be related independently of roots, diatonic collections, and other central premises of classical theory.[24] Triads in this context are quintessentially consonant objects that relate to one another through the qualities of their voice leading alone.

Harmonic satiation equalizes all tones in the voice leading of Cycle 2, including its non-triad tones, from tonal harmonic function to a harmonic function based on consonant triadic objects and their voice leading relationships. Calculating the voice leading relationships proves difficult in the Db-Eb cycle because of the non-triad tones present. What repeats in this cycle are triads connected by the relationships between non-triad tones. In a musical context outside of Glass's repetitiousness, particularly one of common practice diatonic tonality, the non-triad

[24] Cohn, *Audacious Euphony*, 1-39.

tones, G in the Db major arpeggio and F in the E-flat major arpeggio, would be considered as melodic dissonances extraneous to the triadic progression.

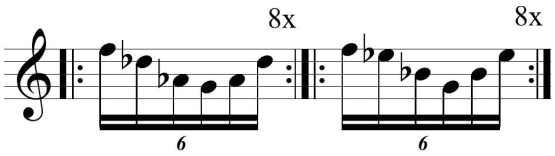

Figure 1.4 Section Three Right Hand Arpeggio

Even if the pitches do not belong to the triad, F and G are present in both harmonies, each in alternation of being a triad tone and an added tone. Since harmonic satiation neutralizes any sense of tonal harmonic progression, it also serves to neutralize the relationships of consonance and dissonance that characterize tonal voice leading. Consider this idealized voice leading of the Db-Eb cycles.

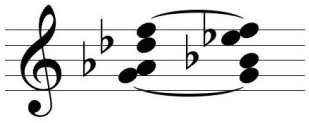

Fig. 1.5 Section Three Voice Leading

In this case, the non-triad tones act as a functional drone within which the perfect fourths {Db, Ab} and {Eb, Bb} alternate. F and G alternate between being a triad member and non-triad tone. Because the non-triad tones are repeated even more consistently than the triad tones, they are part of the harmonic voice leading, rather than discarded as extraneous dissonances. When all pitches are included into the voice leading, it is easy to see the common tone consistency of F

and G between each harmony. This consistency serves to mediate the voice leading of the triads while, at the same time, oscillating between triad tones and added tones.

I should note that the voice leading of this cycle is identical as it appears in section nine, but does vary slightly in section five and the first part of section seven. Here only the G holds as a common tone in the Eb triad. The F moves upward with the triad to the note G in the E major triad.

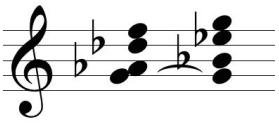

Fig. 1.6 Section Five Voice Leading

Fig. 1.7 Section Seven Voice Leading Change

Most of the harmonic cycles in "The Grid" are triads with added tones. A general principal for voice leading in this piece is that added tones function as common tones between chords (which are noted by ties in the voice leading examples), especially in Cycles 2, 3, and 5. With the exception of Cycle 1, all of the harmonic cycles in "The Grid" involve the satiating

effects of repetition. Because Cycle 1's presentation in Section One is contextualized by an additively building harmonic and orchestrational texture, it is part of a gradual process that arrives at tonic/dominant tonal function with triadic harmony. Harmonic satiation depends on the repeated harmonic consistency exhibited by Cycles 2, 3, 4, and 5.[25] The analytical approach I have described thus far both borrows and contrasts the techniques used by the authors of the extant analyses of Glass' music, which I will now discuss.

1.3 ANALYSES OF GLASS' MUSIC

The few extant analyses of Glass' music rarely approach the music's ambiguous harmonic function with any substance. Several critics have described American minimalism since the 1970's as some kind of "return" to triadic harmony in classical art music. Jonathan Bernard problematizes this notion: "The so-called 'return to harmony' or even 'return to tonality' much remarked upon by critics, is… really an *appropriation* of harmony for purposes that are essentially new and not yet at all understood. To assume that composers, by retrieving such superficially familiar sonorities as triads and major-minor seventh chords, have also taken on, whether intending to or not, the hierarchical nature of common-practice tonality (if not its specific structures) may be assuming far too much."[26]

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[25] The concept of harmonic satiation would be useful in the analysis of a number of genres of music extending beyond Glass' minimalism, consider hip-hop, rock, R&B, and disco, to name a few.

[26] Jonathan Bernard, "Theory, Analysis, and the 'Problem' of Minimal Music," in *Concert Music, Rock, and Jazz Since 1945: essays and analytical studies*, eds. Elisabeth West Marvin and Richard Hermann. (Rochester, NY: University of Rochester Press, 1995), 285.

Chia-Ying Wu's analysis of the solo piano "Opening" from *Glassworks* (1981) recognizes that repetition has a substantial effect on the perception of tonal hierarchy. Wu argues, citing Peter Kivy, that: "Repetition in musical minimalism confronts traditional prescriptive codes of tonal music and post-tonal music. While challenging the traditional codes, repetition in musical minimalism established new codes for listening to minimal music."[27] By this, Wu implies that Glass' repetition instills its own prescriptive codes of harmonic function and turns to a post-Schenkerian methodology to describe it.

Schenkerian analysis of Glass' music is problematic in that one of the goals of Schenkerian reduction is "to hear through the musical surface to the remoter structural levels and ultimately to the tonic (major/minor) triad itself."[28] Tonality, in Schenkerian analysis, is derived from fundamental structures that more or less relate all harmony in a composition to a harmonic framework of I-V-I in a single diatonic key.[29]

Wu departs from traditional Schenkerianism, describing Glass' "Opening" as a "Minimal Tonality" established by a "Minimal" foundational structure.[30] Wu reduces Glass' harmony to their barest triads, disregarding the apparently extraneous added tones and rhythmic figurations. He concludes that "Opening" has not one fundamental diatonic key center, but three fundamental structures of harmonic centricity, which are the fundamental tonal centricities of different harmonic cycles in the piece. This harmonic ambiguity is caused by what Wu calls "loop

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[27] Chia-Ying Wu, *The Aesthetics of Minimalist Music and a Schenkerian-oriented Analysis of the First Movement "opening" of Philip Glass' Glassworks*, (Masters Thesis, University of North Texas, 2009) 2.
[28] Joseph Straus, "The Problem of in Post-Tonal Music," Journal of Music Theory 31/1 (Spring 1987), 1.
[29] Allan Cadwalader and David Gagne, *Analysis of Tonal Music: a Schenkerian Approach*, (New York: Oxford University Press, 2000), 102-118.
[30] Wu, *The Aesthetics of Minimalist Musi*c, 23.

breaker" chords, which interrupt the end of one harmonic cycle and begin another, and function to prolong the fundamental structure, in the case below, F-minor.[31]

The rhythmic, metric, and orchestrational surface of "The Grid" constantly fluctuates, and is the driving force behind any sense of volitional directionality a listener experiences in the music. Tonal ambiguity works in conjunction with repetition, to create a harmonically unstable pallet activated by varying rhythmic and orchestrational textures. Glass' repetition of tonally ambiguous harmonic cycles and variation of the rhythmic, metric, and orchestrational context within cycles confront the prescriptive codes of traditional tonality. If a repeating harmonic cycle lacks centricity, or has a centricity not easily defined in tonal terms alone, its ambiguous qualities are strongly affected by the context in which that harmonic cycle repeats. The aspects of Glass' music that do not repeat are what make it progress through time and achieve different types of harmonic centricity. Wu's analysis is commendable for making an argument for how harmony functions in "Opening," but reducing harmony away from its rhythmic context ignores the most significant aspect that defines harmony's syntax.

According to Keith Potter, Glass' music changed drastically in the early 1970's by "the arrival of harmonic motion" in works like *Music in Twelve Parts* (1971-1974) and *Einstein on the Beach* (1976), as opposed to the previous works like *Strung Out* (1967) and *Piece in the Shape of a Square* (1968) that are generally monophonic and feature strict additive processes.[32] This is not to say that Glass' earlier compositions did not feature harmony, but the harmony of these early works did not include the oscillating chord progressions commonly found in Glass' music after 1970.

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[31] Wu, *The Aesthetics of Minimalist Musi*c, 24.
[32] Keith Potter, *Four Musical Minimalists*, (Cambridge: Cambridge University Press, 2000), 273-303.

For example, Potter's analysis of *Two Pages* (1969) argues that the assorted additive processes in the piece emphasize different pitch collections from the fixed set [G, C, D, Eb, F].[33] Wes York's earlier analysis of the *Two Pages*, the first published analysis of a work by Glass, goes further to argue that the pitch collections emphasized at different points in the additive process even highlight different centricities.[34] The goal of Potter's analyses of Glass in the seminal book, *Four Musical Minimalists*, is to construct the narrative that Glass' music changed drastically to include cyclic harmonic progressions.

Potter's analysis of *Music in Twelve Parts* (1971-1974), a work which does feature cyclic harmonic progressions, defines these progressions with Roman numerals within a diatonic key, except in the case of Parts Eleven and Twelve, which feature harmonic progressions that cannot be described under tonal hierarchy. In this case, Potter analyzes these harmonic cycles in terms of competing tonal regions mediated by "pivot chords." This description of harmonic function is prevalent in Milos Raickovich's analysis[35] and in Philip Glass' own brief analysis [36] of harmony in *Einstein on the Beach.*

Glenn Lemieux's analysis of *Music in Twelve Parts* (1971-1974) gives an exhaustive identification of formal proportions, additive and cyclical processes, rhythmic and melodic motifs, as well as the key signature, chords/scales, pitch collections, and pitch centers for each of the twelve parts of the composition.[37] Though Lemieux's analysis is thorough, his work stops at mere description of the works materials and processes, rather than making any claim as to how

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[33] Potter, *Four Musical Minimalist*, 288-290.
[34] Wes York, "Form and Process", in *Writings on Glass*, ed Richard Kostelanetz, (New York: Schirmer, 1997), 79.
[35] Milos Raickovich, *"Einstein on the Beach: a musical analysis*, (Phd. diss, City University of New York, 1994), 53-69.
[36] Philip Glass, *Music by Philip Glass*, (New York: Harper and Row, 1987), 59-63.
[37] Glenn Lemieux, *Construction, Reconstruction, and Deconstruction: "Music in Twelve Parts" by Philip Glass*, (Ph.D. diss, University of Iowa, 2000), 48-88.

these materials and processes affect a listener. None of these analyses of Glass' harmonic progressions do more than identify the chords and state what diatonic key they might project. None make an argument for how this harmony has a functional syntax outside of a referential diatonic hierarchy.

Rob Haskins' harmonic analysis of *Einstein on the Beach* builds on Keith Potter's methodology, which as discussed earlier, is notable for his detailing the effects of repetitive structure in conjunction with harmonic motion. Haskins notes that Glass's harmonic progressions in some parts of *Einstein on the Beach* can be understood "in Neo-Riemannian terms for [their] parsimonious voice leading and traversal of three of the four hexatonic systems. Like the late Romantic music to which Neo-Riemannian theory was initially applied, Glass's harmonic cycle operates in a manner similar to functional harmony but cannot be wholly explained by the traditional principles of functional harmony."[38]

Neo-Riemannian theory is famously associated with the work of Richard Cohn, who, in *Audacious Euphony,* measures the distance between triads in an approach that conceives triadic progressions as tonally indeterminate until they are related by voice leading and cadence into a tonality.[39] For Cohn, harmonic progressions without confirmed tonal centers do not need to be analyzed *a priori* in terms of tonal key structures. Triads can be related independently of roots, diatonic collections, and other central premises of classical theory.[40] Furthermore, Cohn

[38] Haskins, "Another Look at Philip Glass," 29.
[39] Cohn, *Audacious Euphony*, 9.
[40] Cohn, *Audacious Euphony*, 1-15.

considers triads to be quintessentially consonant objects. Consonant objects that relate to one another through the qualities of their voice leading alone.[41]

Thus triadic progressions can exhibit functional syntax without the prerequisite of diatonic space, or even belong to alternative harmonic structures based on consistently parsimonious voice leading. "The conviction that phonological consonance generates syntactic proximity is held by consensus across the many denominations of classical theory, which conceive and represent their subject in distinct and often competing ways. Riemann's functions, Piston's Roman numerals, Schoenberg's structural functions, Schenker's *Ursätze*, and Lerdahl's pitch-space grids say different things about tonal syntax, but the acoustic properties of major and minor triads are foundational to each."[42]

Considering triads as consonant objects, Cohn investigates alternative pitch-space organizations based on how triads relate in symmetrical systems of parsimonious voice leading such as the "hexatonic" cycle (which relates all possible triads formed by all major and minor triads around the common tones of an augmented triad). While Cohn's thesis was designed to analyze music tonally ambiguous in late-Romantic chromaticism, it also provides a useful perspective for analyzing harmonic progressions in "The Grid" that do not assert any harmonic centricity. In fact, if the harmonic cycles in "The Grid" are analyzed in terms of triadic motion alone, a geometric symmetry is revealed:

(Cb) Db Eb F

Fb Gb Ab Bb C

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[41] See also Dmitri Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice*, (New York: Oxford University Press, 2011).
[42] Cohn, *Audacious Euphony*, 39.

From left to right, triads are written with roots of ascending major seconds. From top to bottom, the triads are written as descending fourths. Assuming that the F could represent both F major and minor triads, this diagram shows how all of the harmonic cycles in "The Grid" can be explained as root motions of major seconds and perfect fourths:

Cycle 1

(Cb) Db Eb F

Fb Gb Ab Bb C

Cycle 2

(Cb) Db Eb F

Fb Gb Ab Bb C

Cycle 3

(Cb) Db Eb F

Fb Gb Ab Bb C

Cycle 4

(Cb) Db Eb F

Fb Gb Ab Bb C

Cycle 5

(Cb) Db Eb F

Fb Gb Ab Bb C

Resolution to F of Cycle 3 in "Clouds"[43]

(Cb) Db Eb F

Fb Gb Ab Bb C

The basic triads of Glass' harmonic cycles can all be described under this symmetrical map based on the root motion of triads related by major seconds and perfect fourths. Because triads related by the motion of a major second do not contain any common tones, Glass utilizes harmonic satiation to designate added tones as an equally important part of the voice leading, such as the added tones in Cycles 3, 4, and 5. The overall harmonic syntax of "The Grid" is evident in the repetition of these triads in conjunction with the voice leading equalization of the added, non-triad tones that arise from harmonic satiation. The consistencies and inconsistencies of meter, rhythm, and orchestration that fluctuate within harmonic repetition serve to affirm the harmonic centricity or non-centricity asserted within each section, and act as a primary force that either builds dramatic tension or minimizes the impact of cycle changes between sections and parts.

Rob Haskin's article analyzes many of the same works analyzed by Keith Potter. Haskins does so to contrast Potter's narrative that Glass' music firmly resides in two periods; the early minimalist period of generally monophonic and additive process music, and the post-minimalist period signaled by Glass' return to harmonic progression. While Haskins admits that Glass' music certainly involved more harmonic progressions after the early 1970's, he argues

[43] Cycle 3 appears in "Clouds," and earlier scene in the film, and will be discussed in Chapter 2.1.

that such a historical narrative is too tidy to be true. Haskins problematizes Potter's narrative even to the point of identifying Glass as a true post-modernist, akin to John Cage:

> …Glass cannot be pinned down to such totalizing, grand narrative. Neither, for that matter, could John Cage, with whom the younger composer has frequently allied himself. Cage's approach to composition helps to illustrate this point. Above all, Cage formulated his own artistic work as a simultaneous exploration of different approaches and techniques spanning his entire career; the approach has created difficulties for scholars like William Brooks, who argues that chance allowed Cage to reconfigure the 'meaning' of traditional musical materials in order to recuperate them within his avant-garde aesthetic. Such formulations, while helpful in smoothing over the unusual inconsistencies in Cage's practice, seem to me too tidy, and furthermore minimize the important role of the listener's response to those contradictions. Likewise, Glass has exhibited a contradictory non-linear course in his own career. He has increasingly drawn from a wide variety of materials, including his own musical past, to new ends in his recent music.[44]

Haskins' analyses of *Two Pages*, *Music in Contrary Motion*, *Music in Similar Motion*, and *Einstein on the Beach* seek to find stylistic continuity throughout Glass' oeuvre. What links Glass' early monophonic compositions with his later harmonic progression compositions is the interaction of pitch material and repetitive process full of variation that creates processes of dramatic intensification leading to shifts in additive process and pitch material.[45] In Haskins' analyses, Glass' intensification processes are variously accomplished by "increasing the length and intricacy of added variations… the textural density of added contrapuntal lines… and extreme compression of melodic motion and pitch content"[46] in *Music in Similar Motion*, and "additive variations working toward a climax of intensity–either in harmonic content, complexity

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[44] Rob Haskins, "Another Look at Philip Glass: Aspects of Harmony and Formal Design in Early Works and *Einstein on the Beach*," *JEMS: Journal of Experimental Music Studies* (12 September, 2005) http://www.users.waitrose.com/~chobbs/haskinsglass.html
[45] Haskins, "Another Look at Philip Glass," 5.
[46] Haskins, "Another Look at Philip Glass," 8.

of rhythmic/melodic surface, or combinations of the two"[47] in *Einstein on the Beach.* "The Grid" also features processes of intensification from a variety of rhythmic, metric, and harmonic devices within repetitive process. I call these processes of intensification the building and release of *dramatic charge and discharge*.[48]

1.4 RHYTHMIC, METRIC, AND ORCHESTRATIONAL FLUCTUATION

The three parts of "The Grid" are organized by the charge and discharge of dramatic intensification of rhythm, meter and orchestration. Within the three parts, each new section gradually becomes louder, with wider registrations, faster rhythmic subdivisions, and more complex relationships between harmonic rhythm and rhythmic subdivision. With the exception of the brass introduction, "The Grid" maintains a consistent texture of harmonic arpeggios played by the keyboard and woodwinds. The rhythmic and metric qualities of these arpeggios constantly vary in fluctuating rates and types of differentiation within and between sections of consistent harmonic cycles.

For example, Figure 1.8 shows the rhythmic, metric, and harmonic texture of the fourth section (Bb7-Eb7). Figure 1.8 is organized into three horizontal groups, representing the three orchestral groups in the piece: keyboards and woodwinds, brass, and choir reading from top down. The top line of the figure shows the triadic harmony heard in the section with its harmonic

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[47] Haskins, "Another Look at Philip Glass," 11.

[48] I borrow the analogy of charge and discharge from Daniel Harrison's usage in his description of harmonic function in chromatic music. Harrison uses the terms in relating the agency of harmonic motion as triads are contextualized with Tonic, Dominant, and Subdominant charge and discharge from one function to another. As it applies to harmonic function in "The Grid," Harrison's theory of harmonic function in chromatic music will be further discussed in Chapter 2. See Harrison 90-91.

rhythm measured by the number of quarter-note pulses each harmony sounds. With the exception of the beginning of "The Grid" and a few momentary variations, the harmonies are iterated at a regular pulsation of quarter-note equals 100. Each pulsation marks the beginning of an arpeggio in the keyboards and woodwinds.

The rhythmic subdivision and contour of these arpeggios are shown for each present voice of the orchestral group, in this case, the "right hand" and "left hand" of the group. In this example, the harmonic rhythm begins with a consistent alternation of six pulses per harmony, swells to eight then ten pulses per harmony, and shrinks back to eight and six pulses per harmony. The variation of rhythmic subdivision and arpeggio contour begins in sync with the harmonic rhythm, then varies in counterpoint to the harmonic rhythm.

Contour in the keyboard/woodwind group is marked as UP, DOWN, UP/DOWN, and DOWN/UP depending on the direction of the arpeggio within one pulse. Contour for the brass and choir is only shown when voices oscillate as eighth-notes within the pulse. The region for the brass is missing in this example as the brass is tacet. The consistency of rhythmic subdivisions present in the Choir vary within and beyond the harmonic rhythm and Keyboard/Woodwind subdivisions, and notably maintain a consistent eighth note subdivision when the harmonic rhythm shifts to ten pulses per harmony.

Finally, the staves at the bottom of the figure show the voice leading and registration for the section's harmony. Ties signify common tones in the voice leading. In the case of this section, the voice leading changes after the fourth Bb7-Eb7 cycle so that the Eb7 appears in root position rather than in first inversion. The last cycle changes its resolution to Ab major, which ultimately serves as modulation to the next cycle (Db-Eb).

Figure 1.8
Section Four
(1:07-2:53 in main part)

"The Grid" is composed of sectionalized harmonic cycles that contain an abundance of variation, an aesthetic of musical differentiation rather than repetition. The more slowly changing aspects of this music–orchestration, harmony, even long strands of rhythmic subdivision–act as a contrapuntal ground on which much more quickly differentiating qualities operate an array of variation. Some harmonic sections share similar rhythmic, metric, and harmonic textures (Sections Three and Seven), while other sections are unique (Section Six). Some feature gradual accelerating and/or decelerating processes (Section One), while others attend to patterned variation of rhythmic subdivisions and shifts in alignment among orchestral groups and harmonic rhythm (Section 8).[49] These differentiating fluctuations are the primary force that gradually build dramatic charge that intensifies through Part I and discharges into the new texture and harmonic cycle of Part II, charges throughout Part II to discharge into Part III, and charges throughout Part II to the end.

1.5 CONCLUSION

In this chapter I have described the five harmonic cycles in "The Grid" in terms of how they assert harmonic centricity: tonal centricity, contextually asserted centricity, and no harmonic centricity. I then illustrated how repetition satiates the non-tonal harmonic cycles from the hierarchies of consonance and dissonance that function in common practice harmony. Because of this lack of tonal function, the non-triad tones in these cycles become an equal, and important part of the triadically-based parsimonious harmonic voice leading. The intervallic motion of all

[49] Find as an appendix the complete chart of rhythmic, metric, and harmonic contexts for "The Grid."

triads in “The Grid” can be mapped through a pitch space defined by the motion of major seconds and perfect fourths. Finally, I presented the aspects of the music’s fluctuating textures that, as I will describe in Chapter 2, provide the dramatic charge and discharge of textural intensification that define the work’s three-part structure.

2.0 DRAMATIC FORM AND CYCLIC MODULATION

This chapter will show how the five harmonic cycles interact to create an overall three-part form. Following Capuzzo's concept of sectional centricity, I have segmented "The Grid" into twenty-one sections defined by the harmonic cycles that assert different types of centricity. While the first harmonic cycle in the music functions within a tonic/dominant framework in the key of F, the other four cycles are tonally ambiguous. This ambiguity results from two causes.

The first is that Cycles 2, 3, 4, and 5 do not feature the tonic/dominant relationships of tonal harmony. Though their harmonies could be derived from the key of Ab (including secondary dominants and modal mixture), Ab is never heard as a stable tonal center. Cycles 2 and 5 assert harmonic centricity not from tonal hierarchies, but rather from the contextually asserted metric emphasis of one harmony over the others in the cycle. Cycles 3 and 4 assert no harmonic centricity given their lack of tonal function and relatively equal metric emphasis of harmony.

The second reason for these cycles' tonal ambiguity has to do with the effects of repetition. Glass' use of repetition famously differentiates his harmonic syntax from that of common practice tonality. As these cycles repeat, they are objectified as harmonies that progress smoothly from one to another through parsimonious voice leading. In the context of "The Grid," repetition breaks down tonal hierarchy, an effect I call harmonic satiation. Because of harmonic

satiation, non-triad tones have a stabilizing role as common tones in the harmonic voice leading and cannot be disregarded as dissonances.

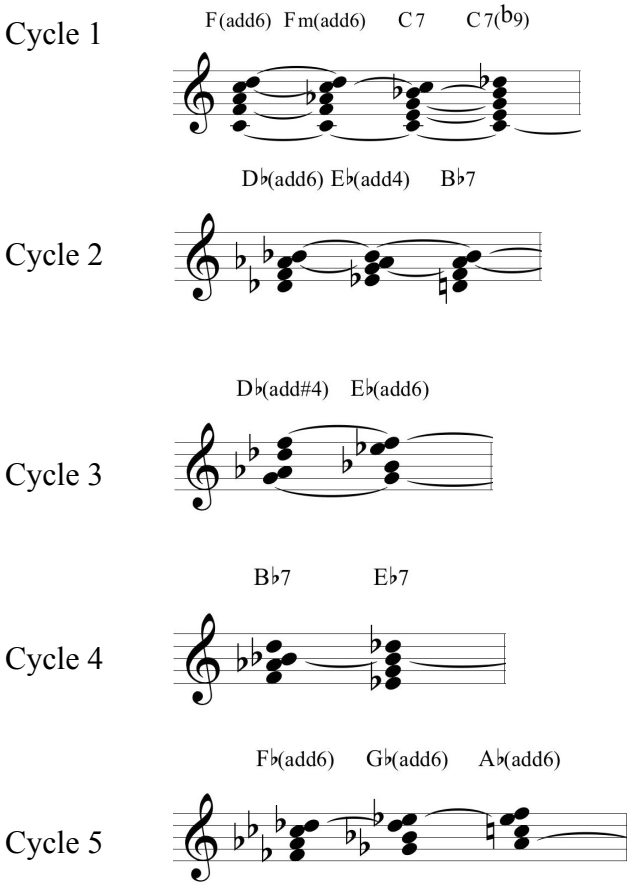


Fig 2.1 The Five Harmonic Cycles of "The Grid

Glass' harmonic cycles repeat while asserting different types of harmonic centricity or non-centricity, but it is the aspects of the music that *don't* repeat that give the "The Grid" a volitionally directional form. The metric, rhythmic, and orchestrational contexts of Glass' harmonic figurations fluctuate constantly, gradually charging dramatic intensifications that

discharge at key moments in the music (as well as in the film). Within a part, Glass uses dramatic charge and discharge of rhythmic, metric, and orchestrational activity to smooth the "modulation" from cycle to cycle. Within each part, the modulations between cycles are accomplished through a number of harmonic devices. This chapter will outline the harmonic cycle modulations in each part as they are coupled with the building dramatic charge over several sections to generate a three-part form. Each part features a different collection of the five harmonic cycles, which are generally grouped by the type of harmonic centricity that the cycles assert (or don't).

Part I of "The Grid" consists of sections one and two (the introduction), featuring a smooth, quasi-tonal modulation between Cycle 1 (tonal assertion of F) and Cycle 2 (contextual assertion of Bb^7). Part II is composed of sections three through eight in an ABABAC(A) structure. Part II begins with oscillating sections of Cycle 3 (no harmonic centricity) and Cycle 4 (no harmonic centricity), modulated by smooth voice leading and mild dramatic discharge, or, as I will argue, through a harmonic substitution that can be defined by Lerdahl's concept of post-tonal prolongation. Following the sectional oscillation of Cycles 3 and 4, Part II modulates smoothly through a quasi-tonal voice leading relationship to the first appearance of Cycle 5 (contextual assertion of Ab) in Section Eight. This appearance of Cycle 5 is coupled with the peaking charge of textural intensification, as well as the gradual substitution of Ab^{add6} with Ab^7. This intensified Ab^7 harmony is "resolved" to the Db harmony of Cycle 3 as Part II dramatically discharges into Part III.

This discharge into Part III is a momentary "recapitulation" of Cycle 3 in a nearly identical rhythmic, metric, and orchestrational context to the beginning of Part I. The

Part:	Part I ("Introduction to The Grid")	
Time Code:	0:00-2:26	2:26-3:24
Section:	Section One	Section Two
Cycle:	Cycle 1	Cycle 2
Centricity:	F	Bb7
Centricity Type:	Diatonic Assertion	Contextual Assertion
Role of Ab	None	

Part:	Part II						
Time Code:	0:00-1:07	1:07-2:54	2:54-4:40	4:40-6:19	6:19-8:43	8:43-11:30	
Section:	Section Three	Section Four	Section Five	Section Six	Section Seven	Section Eight	
Cycle:	Cycle 3	Cycle 4	Cycle 3	Cycle 4	Cycle 3	Cycle 5	
Centricity:	(Db-Eb)	(Bb7-Eb7)	(Db-Eb)	(Bb7-Eb7)	(Db-Eb)	Ab	Ab7
Centricity Type:	No Centricity					Diatonic Assertion	Contextual Assertion	(Dominant Charge)
Role of Ab	Ab as Prolongational Salience					Ab as center then gradually charged as dominant	

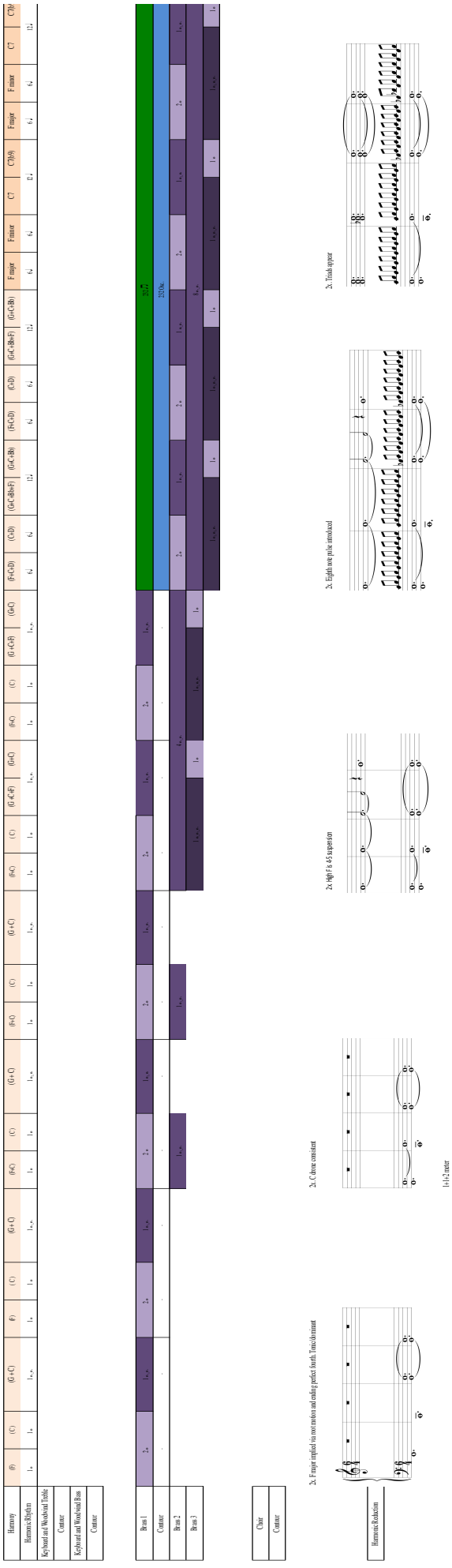
Part:	Part III												
Time Code:	11:30-12:09	12:09-12:37	12:37-13:06	13:06-13:35	13:35-14:04	14:04-14:26	14:26-14:47	14:47-15:09	15:09-15:31	15:31-16:04	16:04-16:34	16:34-17:17	17:17-18:06
Section:	Section Nine	Section Ten	Section Eleven	Section Twelve	Section Thirteen	Section Fourteen	Section Fifteen	Section Sixteen	Section Seventeen	Section Eighteen	Section Nineteen	Section Twenty	Section Twenty-one
Cycle:	Cycle 3	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5	Cycle 2	Cycle 5
Centricity:	(Db-Eb)	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab	Bb7	Ab
Centricity Type:	No Centricity	Contextual Assertion											
Role of Ab	Ab discharges to Db	Tonal Pairing of Ab and Bb7											

Figure 2.2 Large-Scale Form of "The Grid"

recapitulation of Cycle 3 (no harmonic centricity) in Section Nine begins a new process of dramatic charge that intensifies in Sections Ten through Twenty-one, which oscillate relatively quickly between Cycle 4 and Cycle 5 in a tonal pairing of Bb^{7} and Ab^{add6}. After discussing the three parts in greater detail, I will deliberate the structural significance of Ab in the music, which plays distinctive functional roles in various sections of the "The Grid."

2.1 PART I: SECTIONS ONE AND TWO

Part I of "The Grid" is distinguished from the rest of the piece by the assertion of common practice tonal harmony, as well as by being the only part of the piece with an orchestration featuring the brass group alone. Section one does not immediately begin with triadic harmony, but features the gradual addition of voices with a metric grouping of strong, weak, strong; this emphasizes the bass motion of F, C, G. No triads are present at the start, only the pitch F, the drone {F, C}, and the drone {C, G}. This strong, weak, strong metric grouping supports the tonic/dominant relationships of the tonal progression I-i-$V^{7(b9)}$ in the key of F, rather than IV-iv-V^{7}/IV in the key of C. The addition of the flat ninth to the harmony introduces the pitch Db, which contributes as a voice leading mediation between Cycles 1 and 2.


Harmony
Harmonic Rhythm
Keyboard and Woodwind Treble
Contour
Keyboard and Woodwind Bass
Contour
Brass 1
Contour
Brass 2
Brass 3
Choir
Contour
2x. Fanfare simplified: less motivation and ending perfect fourth. Transcribed minimal
Harmonic Reduction
2x. C chrome consistent
2x. Eight note pulse introduced
2x. Triads appear
2x. High F is 4-5 suspension
1+1+2 meter
2x. Fanfare
2x. Fanfare
2x. Fanfare

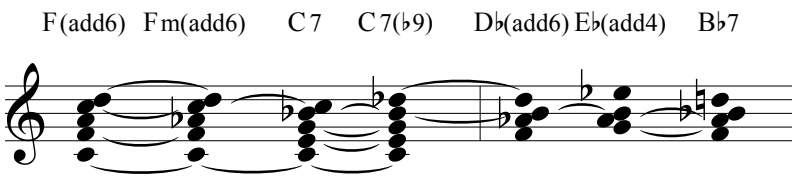


Figure 2.4 Voice Leading Between Sections One and Two

Section two begins with a change to harmonic Cycle 2. With the tonality of F strongly articulated, the first chords of Cycle 2 could be interpreted as bVI-bVII in the key, which helps modulate Cycle 1 to Cycle 2 smoothly.[50] As Cycle 2 repeats, it is satiated from any F major tonality and contextually asserts a harmonic centricity of Bb^7. Cycle 2's harmonic centricity is asserted from a weak, weak, strong metric emphasis in which the tonally ambiguous Bb^7 harmony is twice as long in duration as the Db or Eb harmonies. The modulation from Cycle 1 to Cycle 2 is also mediated by the consistent French horn texture of eighth-note pulsation that bridges Section One and Two.

In the scope of *Koyaanisqatsi* as a whole, this introduction is a bridge between the immediately preceding scene "SloMo People" and the rest of "The Grid" after the introduction. The ending of "SloMo People" is notable for two reasons. First, it is the only scene that ends

[50] The expectation of an F major resolution might be more apparent if one is experiencing "The Grid" in the context of the full soundtrack to *Koyaanisqatsi.* The score for the third scene of the film, "Clouds", features Cycle 2 in a nearly identical brass only texture. In "Clouds" the Db-Eb progression resolves first to Bb^7, but ultimately resolves to F major. However, the resolution of Cycle 2 to F major in "Clouds" does not relate to a previously established tonic, as it does at the start of Section Two in "The Grid."

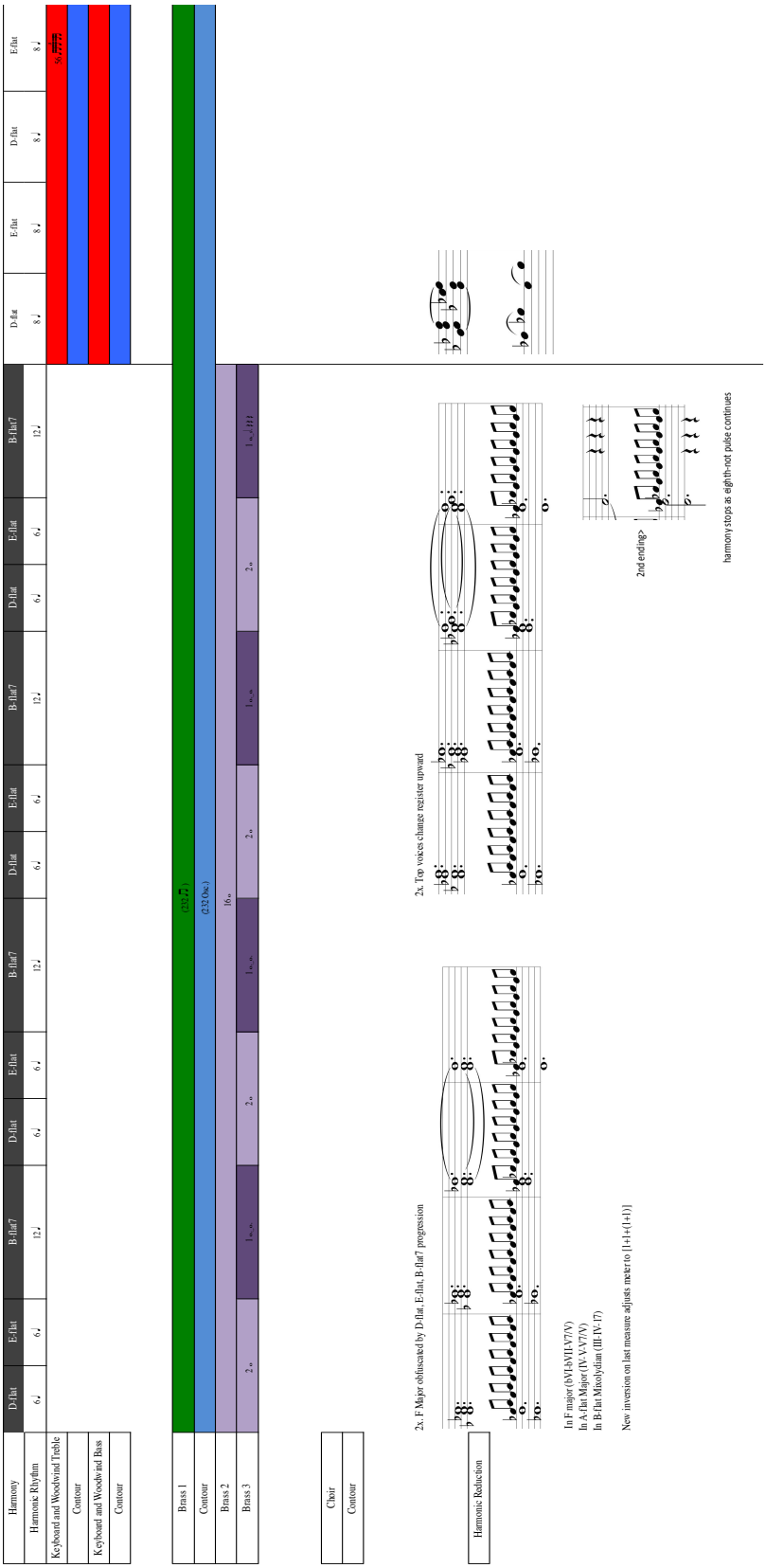


Figure 2.5
End of Section Two and Beginning of Section Three

with a studio fade, rather than being done by the musicians. Second, the studio fade and the beginning of the introduction to "The Grid" is elided by quasi-diagetic sounds reminiscent of ocean waves, a blowing breeze, or distant highway traffic. Glass and Reggio presumably felt a dramatic necessity to mediate the quiet ending of "SloMo People" with the bombastic character of the main part of "The Grid."

Throughout Sections One and Two, volume is gradually increased, timbre brightens, and register ascends. Regardless of the type of harmonic centricity asserted, Part I gradually builds dramatic charge that is discharged by the relatively novel texture of Part II, which features the keyboards and woodwinds arpeggiating figurations of Cycle 3. The dramatic discharge from Part I into Part II contains a thread of texture from the introduction. The seventh cycling of Cycle 1 in Section One introduces the French horn in a subdivision of pulsing eighth-notes. This texture bridges Part I and Part II, and partially mediates the dramatic shift of orchestrational texture from brass to keyboards and woodwinds.

2.2 PART II: SECTIONS THREE THROUGH EIGHT

Sections Three through Eight constitute an ABABAC(A) form where A is Cycle 3, B is Cycle 4, and C is a special appearance of Cycle 5. As discussed in the last chapter, Cycles 3 (Db^{add6}-Eb^{add4}) and 4 (Bb^{7}-Eb^{7}) assert no harmonic centricity. The subsequent presentation of sections Part II contrast one another in rhythmic, metric, and orchestrational context, allowing each section to have some sense of arrival in a vast region of "The Grid" that asserts no harmonic centricity until Section Eight. For example, in the second half of Section Three, the variation of subdivision in the keyboard/woodwind group into four sixteenth-notes from six sextuplets is

coupled with the broadening of harmonic rhythm from six pulses per harmony to eight, then back to six pulses per harmony at the end of Section Three. This produces a fairly mild dramatic charge in that discharges at the beginning Section Four, which reintroduces the choir texture that had stopped in Section Three. (See figures 2.7 and 2.8).

While it would be possible for me to do an exhaustive analysis of every fluctuation in metric, rhythmic, and orchestrational context that occurs, the resulting tome would be unmanageable. Instead, the included figures that show these fluctuations are provided for your perusal. More important to this analysis is how a gradual charging of dramatic intensification is built throughout Part II, which I will discuss in my discussion of Section Eight. First, I will show how Glass modulates between Cycles 3 and 4 in Sections Three through Seven.

At the intersection of Sections Four and Five, Cycle 3 (Db-Eb) modulates smoothly to Cycle 4 (Bb^7-Eb^7). This is modulation is smooth because the intersection of Cycle 3 and Cycle 4 (**Db-Eb-Bb^7**-Eb^7) features the same harmonic motion as Cycle 2 (**Db-Eb-Bb^7**). However, the modulation from Cycle 4 to Cycle 3 between Sections Four and Five is accomplished by a sudden harmonic substitution. On the last repetition of Cycle 4 in Section Four, the Eb^7 harmony is substituted with Ab^{add2}.

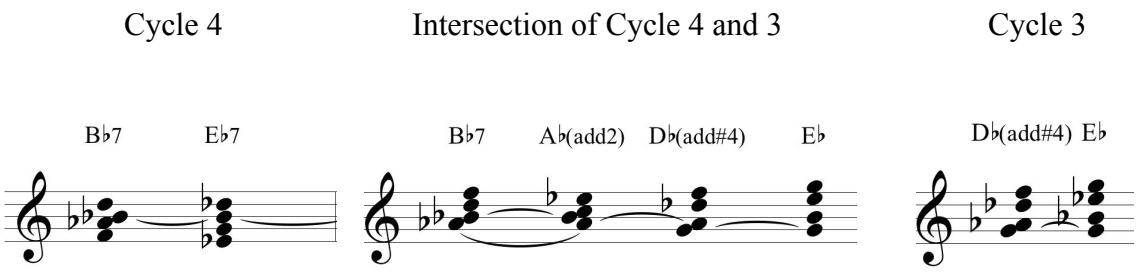


Figure 2.6 Voice Leading Between Sections Four and Five

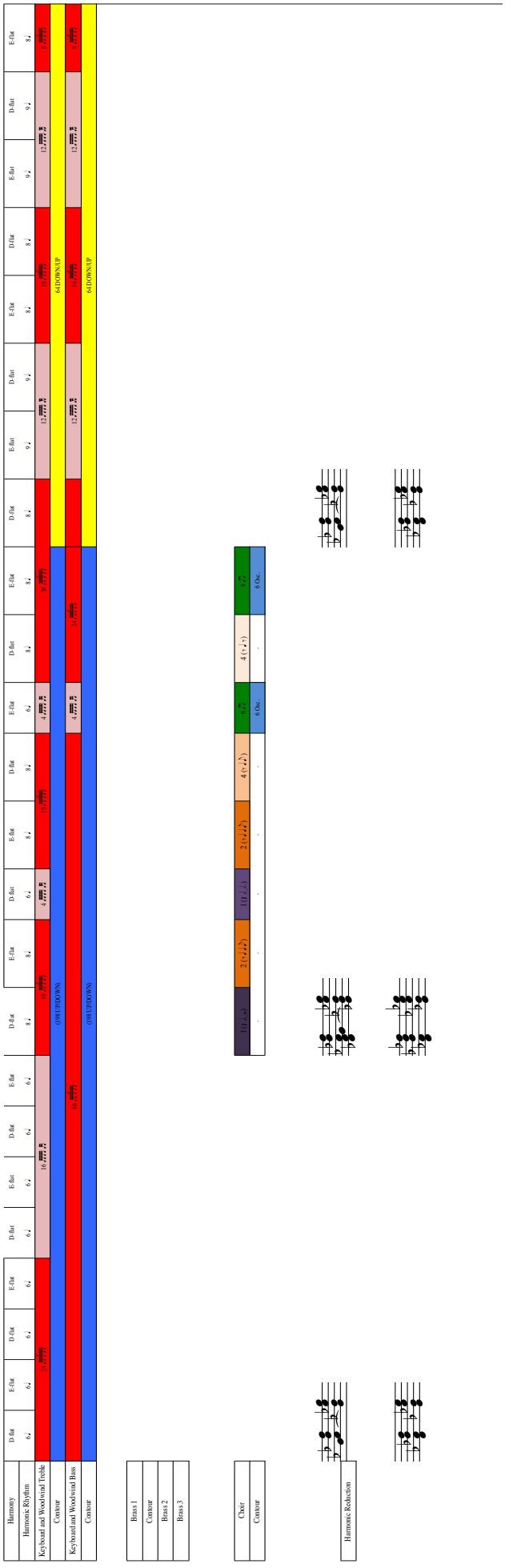


Figure 2.7 Section Three

Figure 2.8 Section Four

This Ab^{add2} substitution interrupts the expected harmonic motion of Cycle 4 (Bb^7-Eb^7) that has consistently repeated throughout Section Four. Cycle 4 asserts no harmonic centricity. That is, it is fundamentally atonal. Prolongation is not a phenomenon dependent on an a priori relationship of harmonic consonance and dissonance. Rather, prolongation is a more broadly defined effect of temporal reduction on differentially salient moments within a larger contextual stability. While the Schenkerian conception of prolongation requires a contextual stability of tonic consonance at a background level and the salience of harmonic dissonance in the middleground, prolongational time-span reduction is possible in post-tonal music if a region of music asserts a contextual stability than can facilitate a conditional salience. Lerdahl states that "salience always plays a reductional role, regardless of [tonal or post-tonal] idiom. The strength of an individual factor depends not only on its immediate context with respect to that dimension."[51] Salience occurs within contextually stable region for an event that is:

1. attacked within the region
2. in a relatively strong metrical position
3. relatively loud
4. relatively prominent timbrally
5. in an outer voice (high or low) registral
6. relatively dense (simultaneous attacks)
7. relatively long in duration
8. next to a relatively large grouping boundary
9. relatively important motivically
10. parallel to a choice made somewhere else in the analysis

The Ab^{add2} substitution at the end of Section Four qualifies as a *weak prolongation*, in which an event repeats in an altered form.[52] The Ab^{add2} substitution does not meet all of Lerdahl's salience conditions listed above. The only salience condition that the Ab^{add2} substitution clearly fulfills is #9, in which a salience is next to a relatively large grouping

[51] Fred Lerdahl, *Tonal Pitch Space*, (New York; Oxford: Oxford University Press, 2001), 298-320.
[52] Fred Lerdahl, "Atonal Prolongational Structure," *Contemporary Music Review* 4/1 (1989), 71.

boundary–the boundary between section Four and Five. In the analysis of atonal prolongational structure, Lerdahl privileges the conditions of salience events over conditions of pitch stability. He does so because atonal music generally exists in a flat pitch space, making it difficult to define any superordinate stability conditions. Glass' atonality in "The Grid" is an exception to this generality. While Cycle 4 asserts no harmonic centricity, its repetition throughout Section Four supplies an obvious superordinate stability condition (Bb^7-Eb^7). The Ab^{add2} substitution is a salience that prolongs the superordinate repetition of Cycle 4 at the boundary of Sections Four and Five.[53]

Another perspective for understanding the modulation from Cycle 4 to Cycle 3 lies in the triadic motion created by the Ab substitution. The triads in Cycle 4 move by perfect fourths:

Cycle 4 Triadic Motion

	(Cb)	Db	Eb	F
Fb	Gb	Ab	Bb	C

When Ab is substituted as a weak prolongation of Eb in Cycle 4, it also substitutes the triadic motion of a major second:

---

[53] The Spring 1987 and 1997 issues of *Journal of Music Theory* feature a debate between Fred Lerdahl, Joseph Strauss, and Steve Larson regarding the conditions for prolongation required in both Schenkerian and post-tonal contexts. In my review of Wu's Schenkerian analysis of *Opening* in Chapter 1.4, I argue that, because "The Grid" has no foundational tonal hierarchy, a Schenkerian approach to Glass' harmony is dubious at best. See the following: Joseph Straus, "The Problem of Prolongation in Post-Tonal Music," *Journal of Music Theory* 31/1, (Spring 1987), 1-21; Steve Larson, "The Problem of Prolongation in 'Tonal' Music: Terminology Perception, and Expressive Meaning." *Journal of Music Theory* 41/1 (Spring 1997),101-136.; Joseph Strauss, "Response to Larson," *Journal of Music Theory* 41/1 (Spring 1997), 137-139; and Fred Lerdahl, "Issues in Prolongational Theory: a response to Larson." *Journal of Music Theory* 41/1 (Spring 1997), 141-155.

Triadic Motion Bb to Ab substitution

(Cb) Db Eb F

Fb Gb Ab Bb C

When the Ab prolongation in Cycle 3 moves to the Db that begins Cycle 4, it does so with the perfect fourth resolution that it had previously disrupted:

Triadic motion of Ab substitution to the beginning of Cycle 4

(Cb) Db Eb F

Fb Gb Ab Bb C

The triads of Cycle Three in Section Five, however, move by major second:

Cycle 3 Triadic Motion

(Cb) Db Eb F

Fb Gb Ab Bb C

The Ab^{add2} salience that prolongs the Eb^{7} in Cycle 4 mediates the modulation from Cycle 4 to Cycle 3. It does this via a roundabout motion through the geometric triadic space that organizes all of the harmonic cycles in "The Grid." Between Sections Three and Four, Glass modulates directly from Cycle 3 to Cycle 4 through the triadic motion of a perfect fourth. Glass uses the Ab^{add2} prolongation in order for the modulation from Cycle 4 back to Cycle 3 to be mediated by a similar perfect fourth triadic motion.

Furthermore, the modulation from Cycle 4 to Cycle 3 is mediated by changes in the bass motion in the voice leading of Cycle 4. These changes in bass motion prepare the bass of the Ab substitution in Section Four. Cycle 4 begins with a bass motion from F to G:

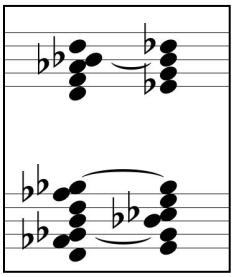


Figure 2.9 Initial Voice Leading of Cycle 4

Next, the voice-leading changes to a motion of (F) to (Eb), the first appearance of a root position chord in "The Grid" since the introduction:

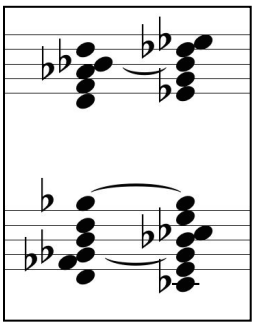


Figure 2.10 Change in bass motion

Finally, on the last repetition of the cycle, Bb^{7} resolves with the same bass motion to Ab^{add2} in second inversion:

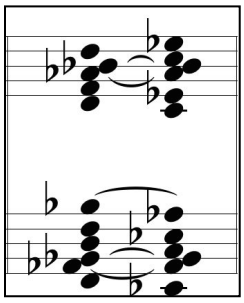


Figure 2.11 Ab substitution at the end of Section Four

The modulation from Cycle 4 to Cycle 3, at the junction of Sections Four/Five and Six/Seven, is dramatized by the exit of the choir from the orchestrational texture. With the exception of the beginning of Part II, all modulations to Cycle 3 in "The Grid" feature the sudden exit of the choir and resumption of the arpeggio textures of the keyboards and woodwinds. The exit of the choir at the end of Part II and beginning of Part III is particularly effective. I will discuss the context of this modulation.

Fig. 2.12 Section Five

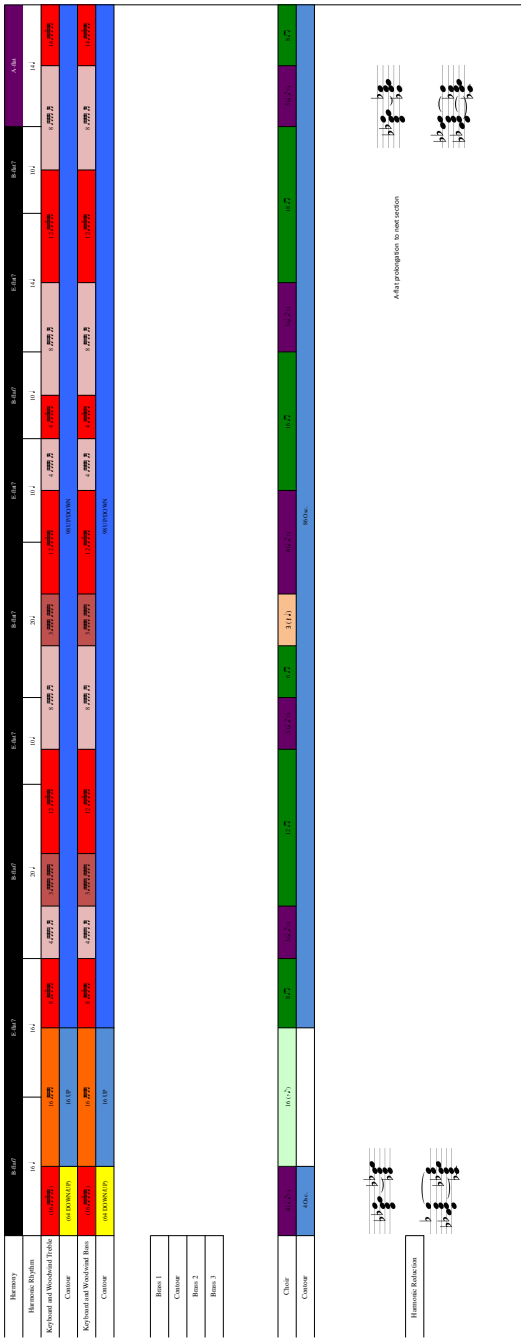


Fig. 2.13 Section Six

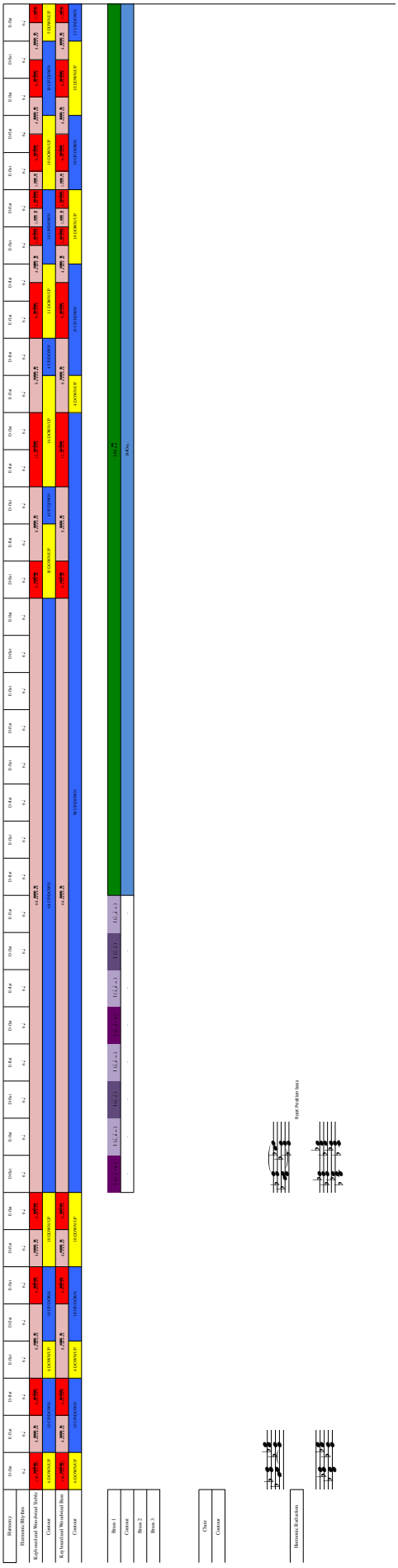


Fig. 2.14 Section Seven

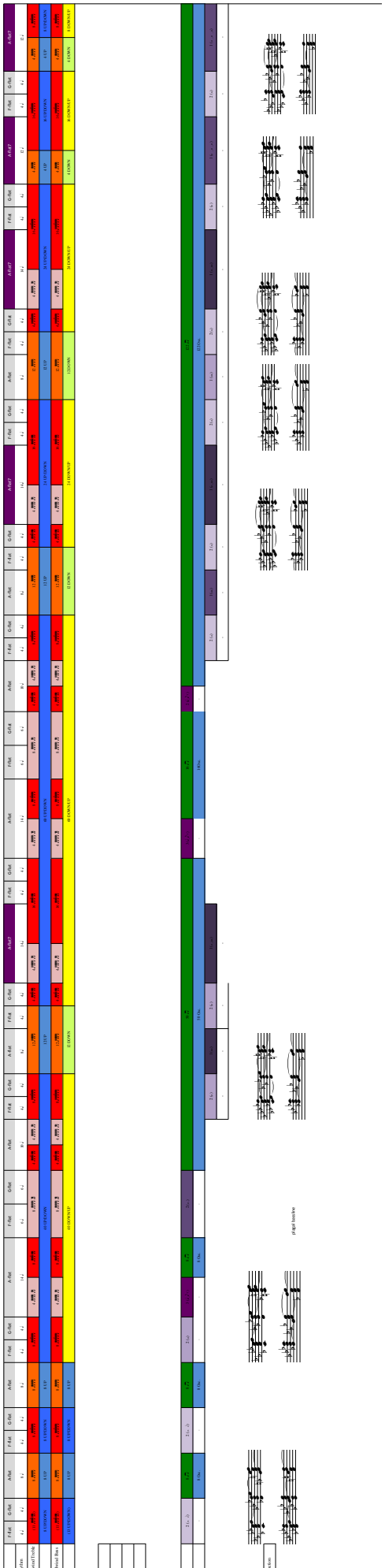


Fig. 2.15 Section Eight

2.3 PART II: SECTION EIGHT

Section Eight is a unique section in "The Grid" that marks the return of harmonic centricity that has been missing since the beginning of Part I: the first appearance of Cycle 5 (Fb^{add6}- Gb^{add6}-Ab^{add6}). Part II as a whole builds a dramatic charge of textural intensification through a gradual increase in volume, brightening of instrumental timbre, climbing of registration, quickening of rhythmic subdivision, and increasing complexity of nonalignment between the variations of rhythmic subdivision, arpeggio contour, and harmonic rhythm. The dramatic charge of Part II reaches its peak in Section Eight when the textural complexity of the keyboards and woodwinds escalate and the registration of the choir climbs higher and higher.

Harmonically speaking, the intersection of Section Seven and Section Eight relates to harmonic conjunction that modulated Cycle 1 to Cycle 2 in Part I. The intersection of Cycle 1 and Cycle 2 in Part I momentarily implied a continuation of Cycle 1's F tonality that is interrupted by the motion to Bb^7 in Cycle 2: I-i-V^7-bVI-bVII-[Bb^7] (F-fmin-C^7-Db-Eb-Bb^7). The modulation between Section One and Section Two modulates from a cycle that asserts tonal harmonic centricity to a cycle that contextually asserts harmonic centricity, which is objectified away from tonal pitch space through the effects of harmonic satiation.

The intersection of Sections Seven and Eight modulates from a cycle with no harmonic centricity (Cycle 3) and a cycle that contextually asserts a harmonic centricity of Ab^{add6} (Cycle 5). This modulation is prepared by a change in the bass motion of Cycle 3 in Section Seven that puts both triads (Db^{add6}-Eb^{add6}) in root position:

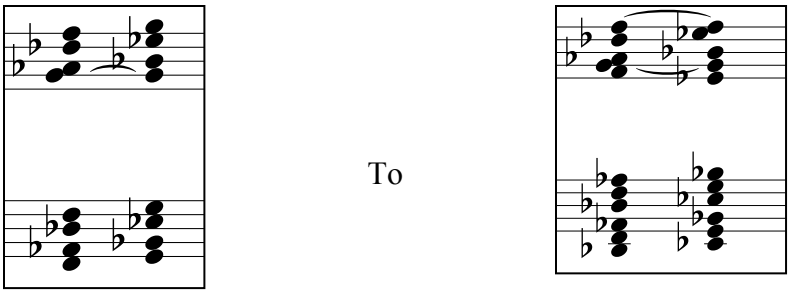


Figure 2.16 Voice Leading Change in Section Seven

The voice leading between Cycle 3 and 5 at the end of Section Seven momentarily creates a harmonic motion of $Db^{add\#4}$-Eb^{add2}-Fb^{add6} –Gb^{add6}-Ab^{add6}, all in root position[54]:

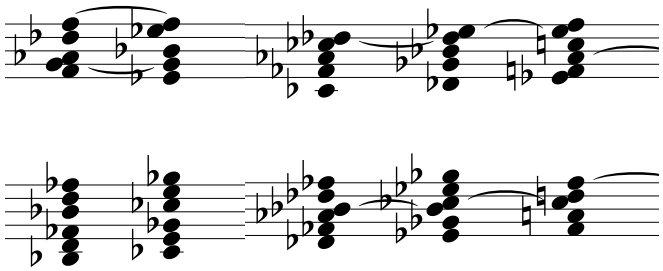


Figure 2.17 Voice Leading between Section Seven and Eight

Though this cyclic conjunction is not tonally functional, the triadic motion is similar to the conjunction of Cycle 1 and 2 in Part II. Since the conjunction of Cycles 2 and 5 is not tonally functional, a Roman numeral analysis of its harmonic motion is frivolous. However, analyzing

[54] Because the harmonies in Cycle 5 begin in root position, I analyze these chords as triads with added sixths, rather than as inverted minor seventh chords.

this harmonic motion with Roman numerals referring to the key of Ab provides a useful comparison between it and the conjunction in Part I.

Conjunction between Sections One and Two (F):	I-i-**V^7-bVI-bVII**-[Bb^7]
Conjunction between Sections Seven and Eight (Ab):	IV-**V-bVI-bVII**-I

These two cycle conjunctions are the only moments in "The Grid" where the basic triads of the intersecting cycles move by minor seconds, as opposed to the motion of major seconds and perfect fourths that characterize the harmonic motion of all other cycles and cyclic conjunctions.[55] The change in the bass motion of Cycle 3 in Section Seven prepares this smooth, and familiar modulation to Cycle 5 in Section Eight.

After two repetitions of Cycle 5 in root position, the bass motion changes the inversions of Fb^{add6} and Gb^{add6} to create a quasi-plagal bass motion to the Ab^{add6} harmony:

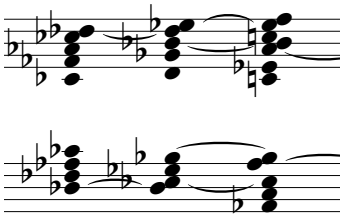


Figure 2.18 "Plagal" Bass Motion Change in Section Eight

[55] Cycle 5 also relates to the presentation of Cycle 2 in the earlier scene, "Clouds". As discussed earlier, the presentation of Cycle 2 in "Clouds" eventually changes from a harmonic motion to Bb^7 to a motion to F. Cycle 5 is a transposition of this variation of Cycle 2 in "Clouds".

The quasi-plagal bass motion of Cycle 5 then repeats seven times in varying harmonic rhythms that durationally emphasize Ab^{add6}. From here to the end of section eight, the choir's registration gradually inverts upward and extends beyond the registration of the keyboard/woodwind group for the first time in the "The Grid." As the dramatic charge builds to the end of Section Eight, the Ab^{add6} harmony changes to Ab^{7}. The seventh of this chord (G) is highlighted by the soprano voice, which is in its highest register thus far in "The Grid". This Ab^{7} harmonic substitution occurs at the peak of Part II's dramatic charge. Even though the Ab^{7} resolves upward by perfect fourth to the Db harmony of Cycle 3 in Section Nine, it does not have any dominant function since it is presented in a cycle that contextually asserts harmonic centricity without tonal harmonic function.

2.4 PART III: RECAPITULATION AND TONAL PAIRING IN SECTIONS NINE THROUGH TWENTY-ONE

The modulation from Cycle 5 to Cycle 3 is the most dramatic in "The Grid" because of the sudden dramatic discharge, including the sudden exit of the choir, that occurs at the arrival of Section Nine, which presents Cycle 3 in a near literal recapitulation of the beginning of Part II (Section Three). With the exception of Section Six, the sections of Part II's ABABAC(A) form increase in duration. Section Nine is significantly shorter in duration, a sudden change in sectional duration that sets off another building of dramatic charge throughout Part III, the final part of "The Grid."

Section #	Three	Four	Five	Six	Seven	Eight	(Nine)
Cycle #	3	4	3	4	3	5	3
# Pulses	104	178	184	140	240	270	64

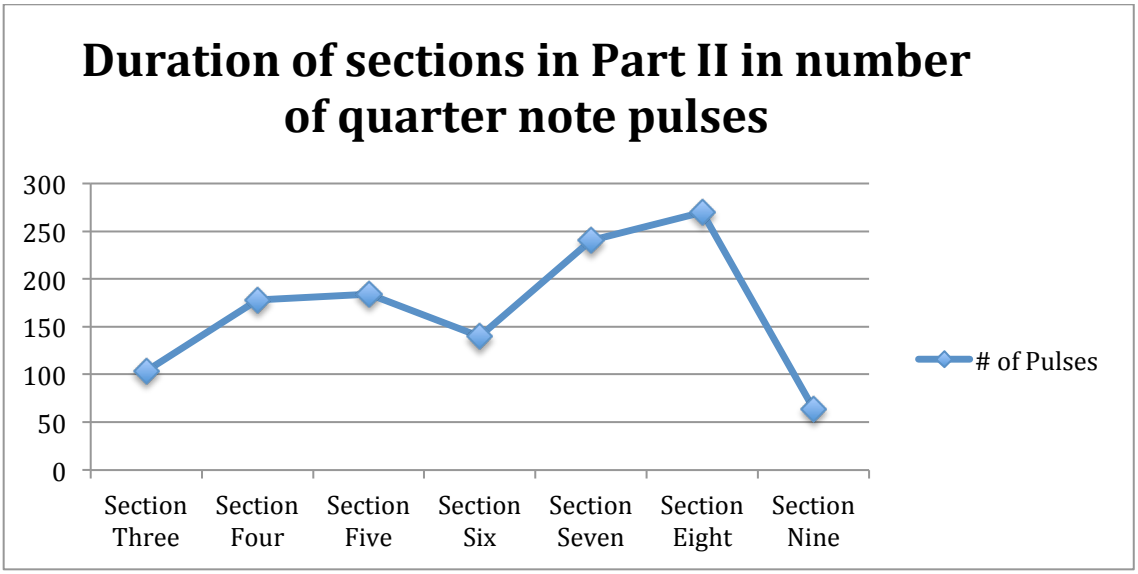


Fig. 2.19 Duration of Sections in Part II in Number of Quarter Note Pulses

Sections Ten through Twenty-one make up the rest of Part III, which is composed of alternating three repetitions each of Cycles 2 and 5. All of the sections feature the weak, weak, strong metric emphasis. Each cycle has a contextually asserted harmonic centricity: Bb^{7} in Cycle 2, and Ab^{add6} in Cycle 5. Part III is then defined by the alternation of these two harmonic centers, a novel harmonic construction in the piece.

Donald Bailey and Harald Kreb's concept of double tonality, or tonal pairing, while intended to describe harmonic practices of late 19^{th} century composers such as Schubert and Wagner, is a useful concept for understanding the harmonic syntax in Part III. Double tonality or

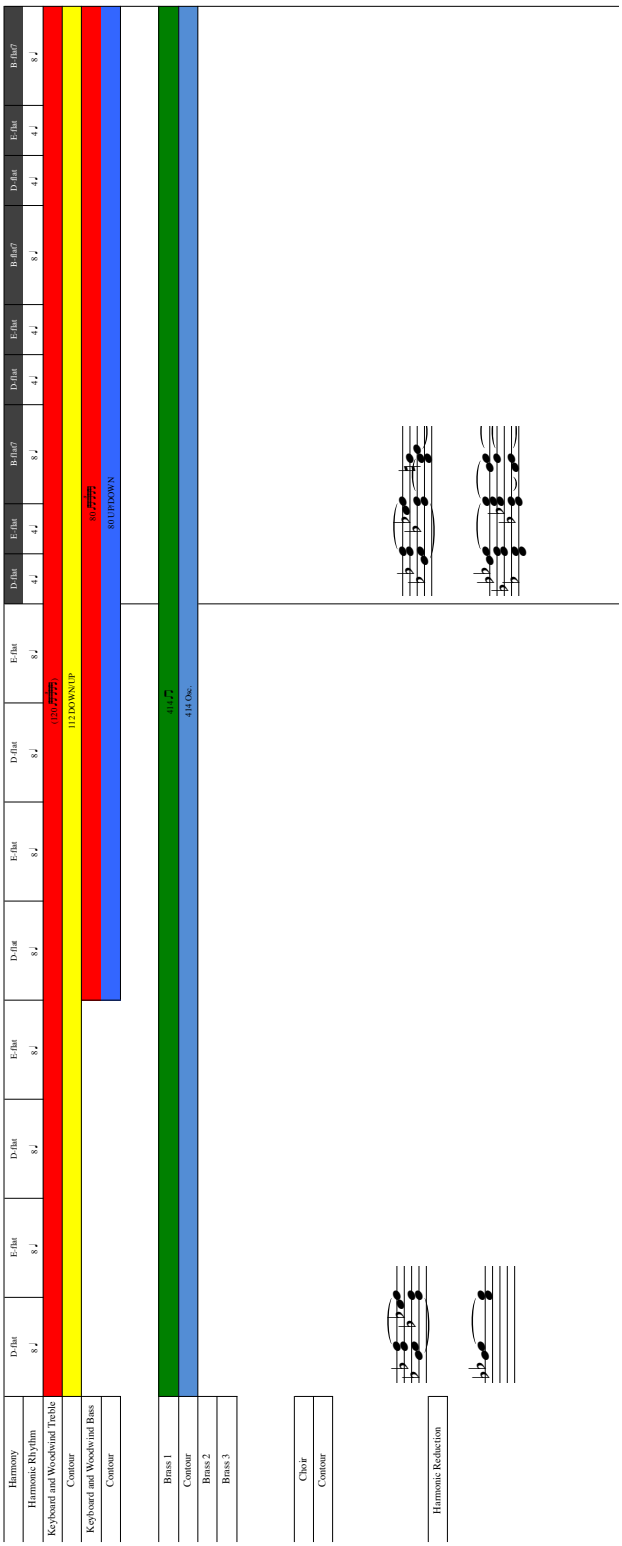
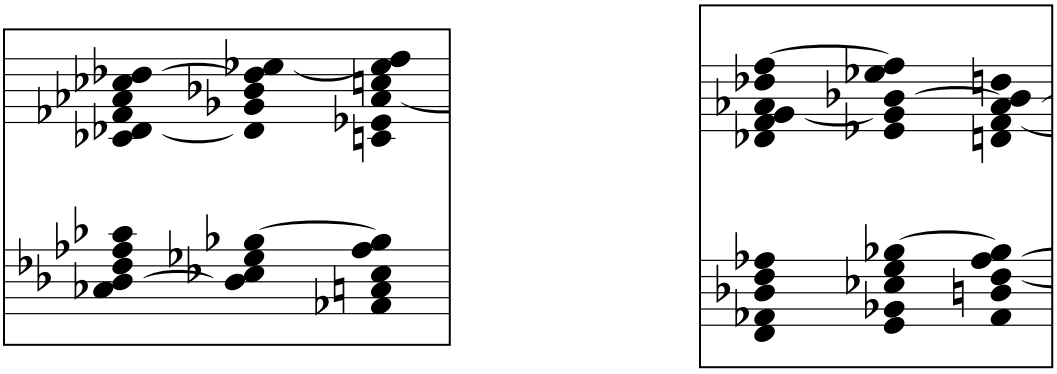


Figure 2.20 Sections Nine and Ten

tonal pairing occurs when "two [unequally weighted] keys alternately occupy either [tonic] triad of the pair can serve as the local representative of the tonic complex. Within that complex itself, however, one of the two elements is at any moment in the primary position while the other remains subordinate to it."[56]

Sections ten through twenty-one alternate between harmonic centers of Bb^{7} and Ab^{add2}. The voice leading of each cycle prominently emphasizes Ab as the bass of the centric harmonies.



Cycle 5 **Cycle 2**

Figure 2.21 Cycle 5 in Part III and Cycle 2 in Part III

While Cycle 2 asserts a harmonic centricity of Bb^{7}, its bass motion emphasizes Ab as the bass of a Bb7 chord. Ab^{add6} is also the harmonic center that ends "The Grid," which, according to Harrison, is a further assertion of tonic function.[57] All sections of Cycles 2 and 5 in Part III feature three repetitions of the cycle, further establishing the relationship of Tonal Pairing

[56] Robert Bailey, "An Analytical Study of the Sketched and Drafts," in *Prelude and Transfiguration from 'Tristan and Isolde'*," ed. Robert Bailey, (New York: EW Norton, 1985), 121–22.
[57] Harrison, Harmonic Function in Chromatic Music, 76.

between Ab and Bb^7. Cycles 2 and 5 also pair because they share a similar intervallic motion in their voice leading: up a whole step then down by half step. It appears here in Cycle 2:

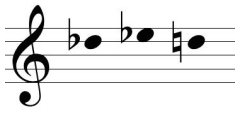


Figure 2.22 Chromatic Voice in Cycle 2

And here in Cycle 5:

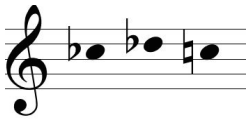


Figure 2.23 Chromatic Voice in Cycle 5

Throughout the presentations of both pair cycles, the choir's maintains a texture of oscillating eighth-notes that highlight the non-triad tones of the voice leading. The voice leading of the choir part is largely in parallel motion, emphasizing the ascending whole-step triadic motion of the Cycles. Like Parts I and II, Part III also has a gradual building of dramatic charge by gradually intensifying volume, adding orchestration, upward moving registration, quickening of rhythmic subdivision (the eighth-note triplets played by the trumpets are a novel texture at the end), escalating rhythmic/metric counterpoint between orchestral groups and harmonic rhythm. This charge of intensification discharges at the end of "The Grid," dramatically ending the music.

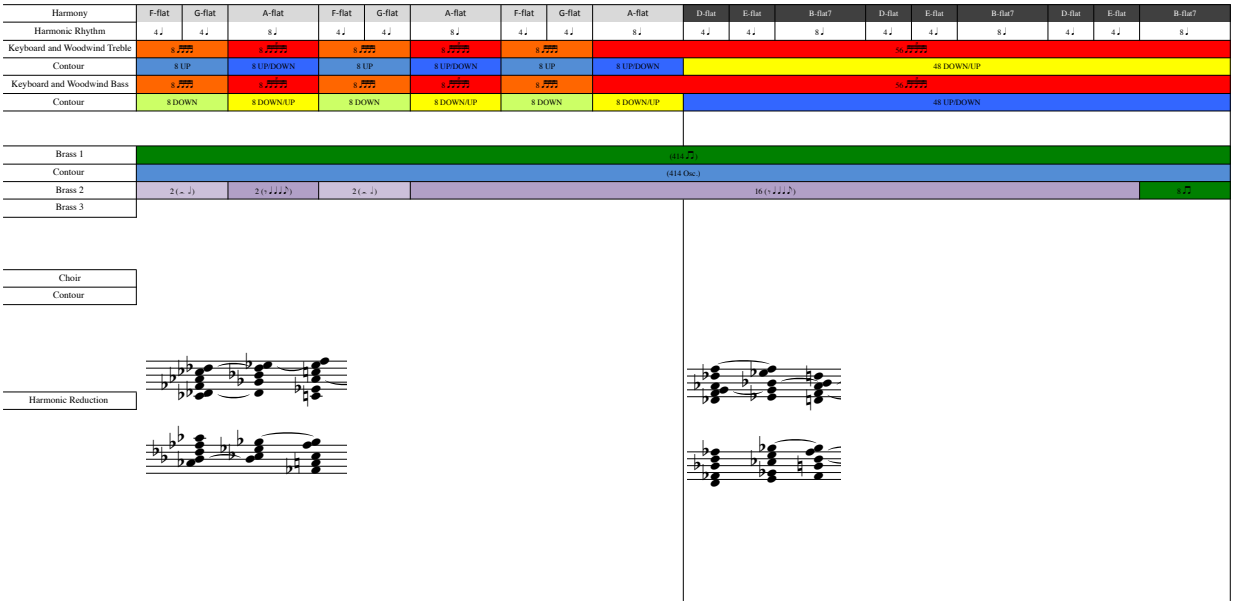


Figure 2.24 Sections Eleven and Twelve

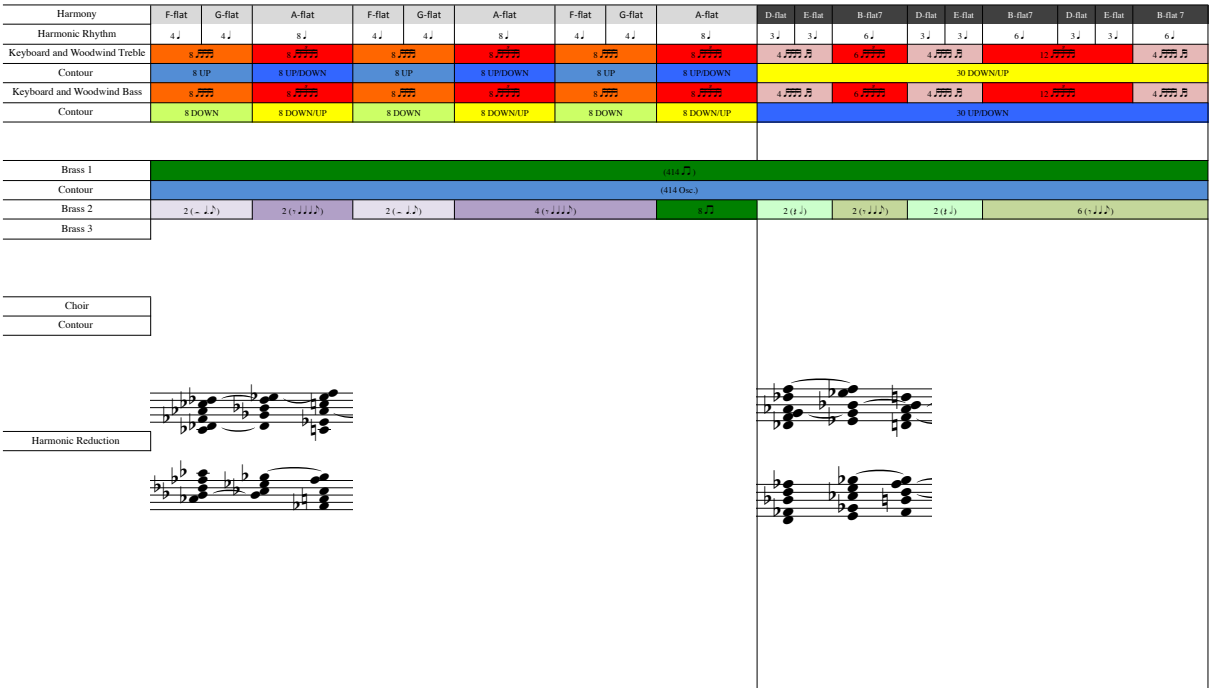


Figure 2.25 Sections Thirteen and Fourteen

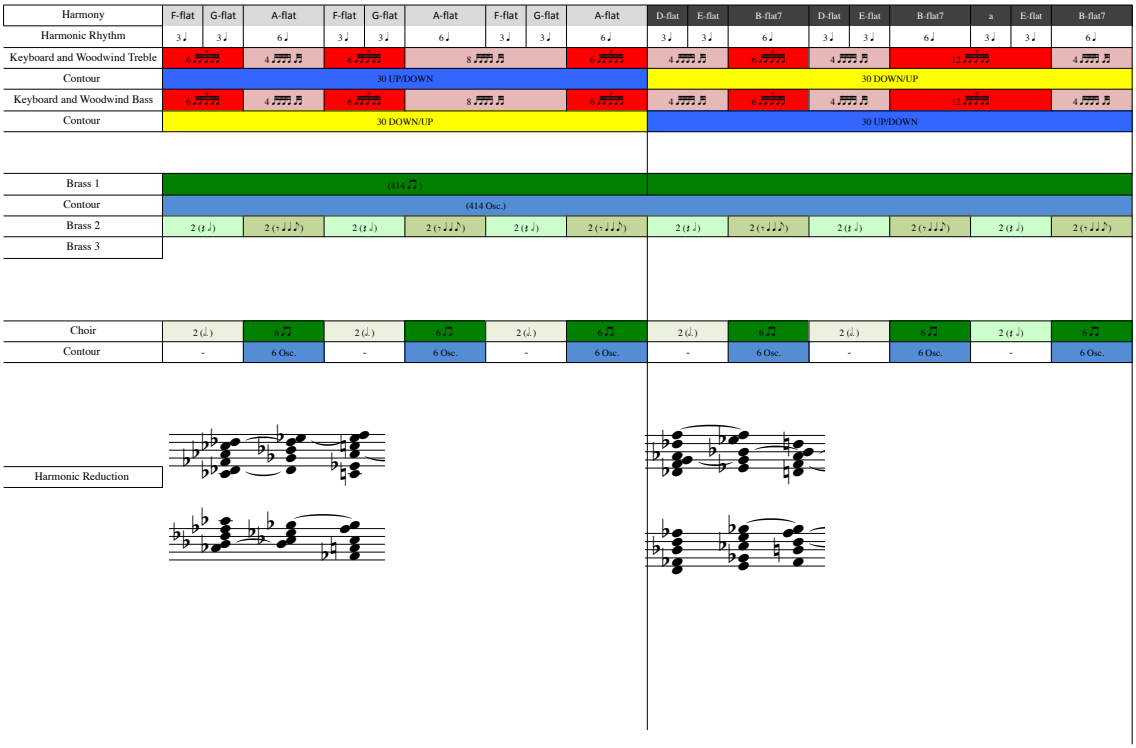


Figure 2.26 Sections Fifteen and Sixteen

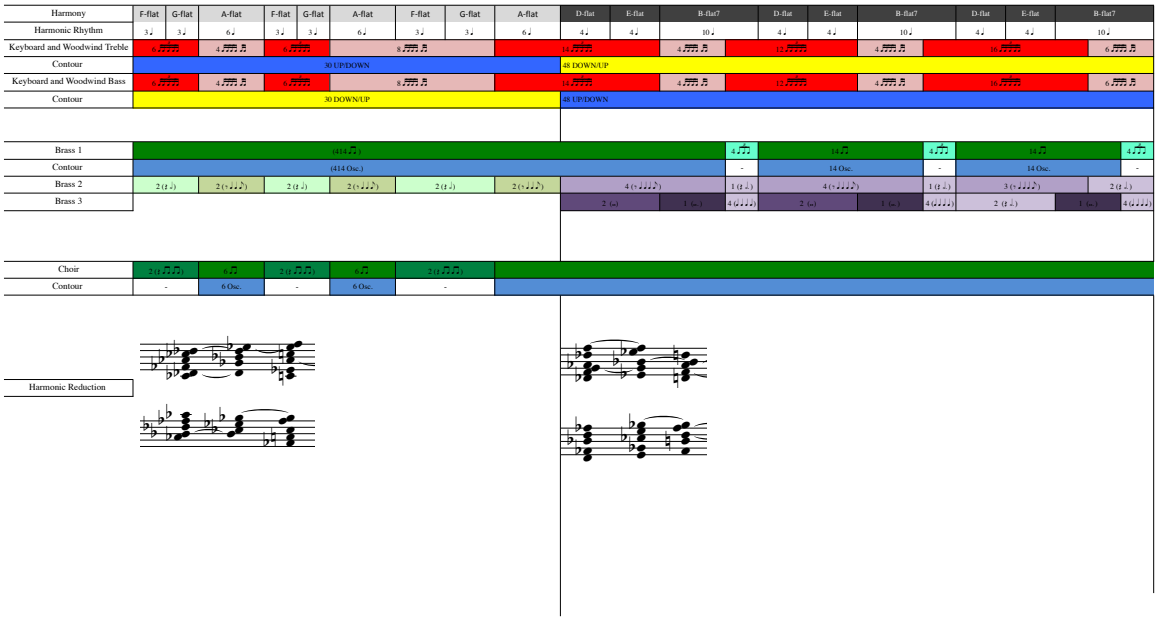


Fig. 2.27 Sections Seventeen and Eighteen

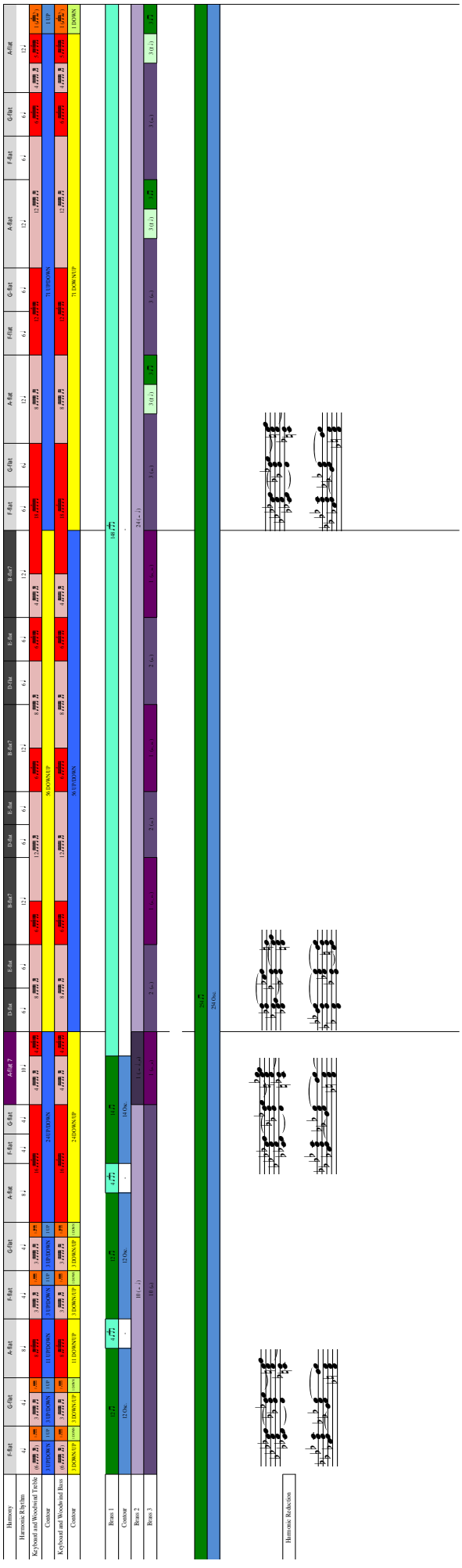


Figure 2.28 Sections Nineteen, Twenty, and Twenty-One

2.5 CONCLUSION

This analysis described how Glass' harmonic syntax in "The Grid" that extends beyond the majority of the extant analysis of Glass' music, which generally identify the triads of harmonic cycles, assigning roman numerals between conflicting tonal centers, and conclude the analysis arguing that the harmony is tonally ambiguous. The harmonic syntax of "The Grid" is not hierarchically organized around any fundamental tonal center. Instead, Glass' syntax is based on the satiating effects of repetition on the harmonic cycles that assert various types of centricity: tonally functional centricity, contextually asserted centricity, no centricity, and even the tonal pairing (or perhaps *centric* pairing) of two harmonic cycles that contextually assert centricity. Repetition and lack of large-scale tonal function imply that this music is harmonically static.

However, the fluctuation of rhythmic, metric, and orchestrational textures dramatically charge in intensification in order to suddenly discharge at significant intersections of harmonic cycles. The points of dramatic discharge in "The Grid" divide it into three parts. The dramatic charge built by the brass in Part I discharges at the entrance of the keyboard and woodwind arpeggios at the beginning of Part II. The dramatic charge built in Part II discharges at the recapitulation of the same texture at the beginning of Part III. Part III then builds dramatic charge to the end of "The Grid." It is interesting how the charging of textural intensification, especially featuring the building and exiting of the choir texture, always discharges to Cycle 3, a large-scale repetition that further supports the three-part form.

While the scope of this dissertation is limited to the analysis of Glass' score for "The Grid," two film analyses of "The Grid" offer possible interpretations of the relationship between music and image. According to Robert Fink, the climactic ending of the music is juxtaposed by the image of a woman holding her children while watching an overload of time-lapsed television,

suggesting a reading of *Koyaanisqatsi* in which "…repetitive music provides us with the sonic equivalent of time-lapse, video archiving, and multiple TV sets: a chance to experience as an aesthetic effect, the entirety of media flow, with its sublime excess of repetitive desiring-production."[58]

Rebecca Eaton's analysis does include a relatively vague formal analysis of only a few sections from Part II, and follows to examine if there is any direct correlation between changes in the music with visual cuts in the film that support an analogy between the music and images of people versus images of technology. Eaton concludes that the relationship of music and image in "The Grid" reflects a loss of subjectification between humans and technology because, in the two sections she analyzed following Nicholas Cook's theory of multimedia, the film cuts between images of people and technology and changes in the music do not align.[59]

Though Fink's and Eaton's critiques of media, technology, and humanity are valid interpretations of "The Grid," their musical analyses are both incomplete and underdeveloped. This analysis offers a description of the harmonic syntaxes and volitional dramatic intensification in the music that could better serve to analyze the relationship between Glass' score and Reggio's images. The sections and parts segmented in this analysis generally coincide with cuts in the film image. The alignment of changes in the music and changes in thematic imagery support a rough narrative that describes the quotidian daily events in the life of the average 1970's American laborer: commute to work, work, lunch and recreation, more work, commute home, and recreation.

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[58] Robert Fink, *Repeating Ourselves: American Minimal Music as Cultural Practice* (Berkley and Los Angeles: University of California Press, 2005), 165.
[59] Rebecca Eaton, "Unheard Minimalisms: The Functions of Minimalist Technique in Film Scores," (Ph.D. diss., University of Texas at Austin, 2008)

The musical form and harmonic syntax argued for in this analysis describes twenty-one sections, segmented by harmonic region, organized under a three-part structure marked by sudden, dramatic shifts in the intensifying texture of harmonic figurations and arpeggios performed by the three orchestral groups: keyboard/woodwinds, brass, and choir (see Fig.1.1). As for how the music and film image align, Part I is presented alongside time-lapsed images of nighttime, sparsely lit buildings, the moon; followed by time-lapsed images of early morning highway traffic. The dramatic intensification of the brass choir texture in Part I is supported by the acceleration of the time-lapsed images.

The images of morning commuters continue over the beginning of Part II, with a time-lapsed image of daybreak corresponding with the entrance of the choir in Section Three. Sections five and six coincide with images of people working on factory assembly lines. At the arrival of section seven, the image cuts to relatively long stationary shots of food production facilities (it must be close to lunchtime) followed by images of people eating and recreating during their lunch hour.

The music in section eight features the gradual charging of dominant function to the Ab^7 harmony in Cycle 5 as well as the culmination of dramatic charge from Parts I and II. The images accompanying section eight feature people returning to work, as well as intercut shots of minting currency and personal computers (a new commercially available technology at the time). The dramatic discharge that starts the beginning of Part III coincides with imagery of people commuting away from work. Part III continues with images of people on the beach, dancing in clubs, and watching TV, all with accelerating time-lapse speeds.

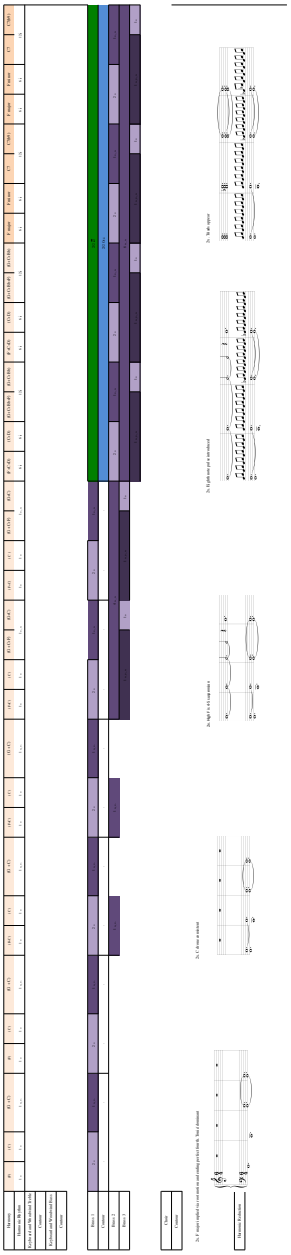
The camera angles in the first two parts of "The Grid" largely consist of stationary high-angle and birds-eye shots with occasional panning. As the music of Part II dramatically

intensifies the tonal pairing of Cycles 2 and 5, the camera shot also presents point-of-view perspectives of people riding in automobiles but also point-of-view perspectives of a Twinkie on the production line, implying an alternative visual subjectivity.

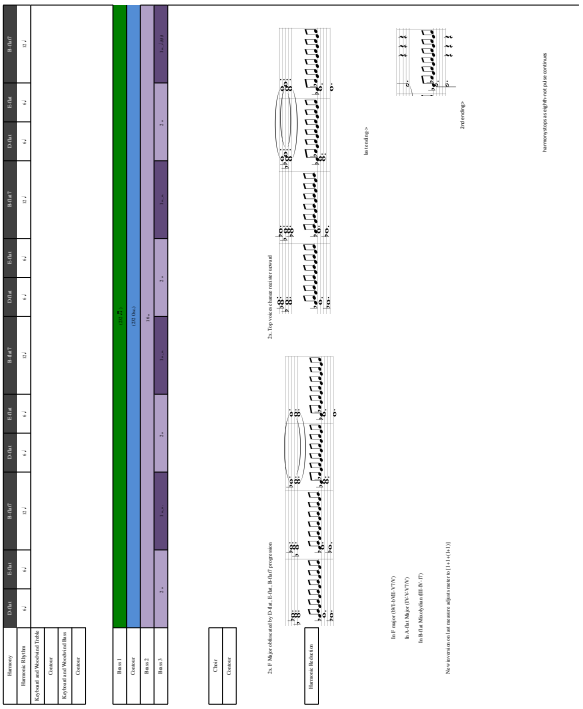
It would be useful to analyze in greater detail the relationship between image cuts and harmonic cycle repetitions within sections to show how the rhythmic relationship between the two might add to the musical structures and effects described in this dissertation. The interaction between music and image in "The Grid" is by no means arbitrary, and in fact supports the quotidian narrative, the montage of everyday work-life described above: commute, work, lunch, work, recreation. The title, "The Grid," is not only referent to the repetitive structures organizing Glass' music–repetition as a defining feature of grids. Additionally, I contend that the title of this scene has more to do with the colloquialism "off the grid," which means to live without being involved with nor requiring mainstream sources of energy or other public utilities. This scene depicts "The Grid" as a massive network of people, technology, and media and the multivalent flows of bodies, information, and capital that mediate its assemblage. The various flows of a late 1970's American industrial city are reified by Glass' repetitive, yet directional music and Reggio's dynamic time-lapsed, thematic imagery.

APPENDIX A

CHARTS OF RHYTHMIC/METRIC/ORCHSTRATIONAL/REGISTRAL FLUCTATION IN "THE GRID"



Section One



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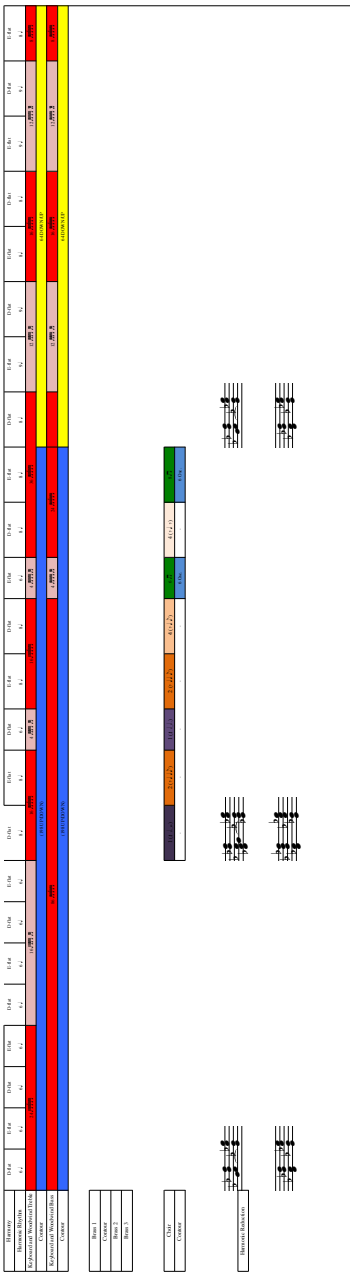

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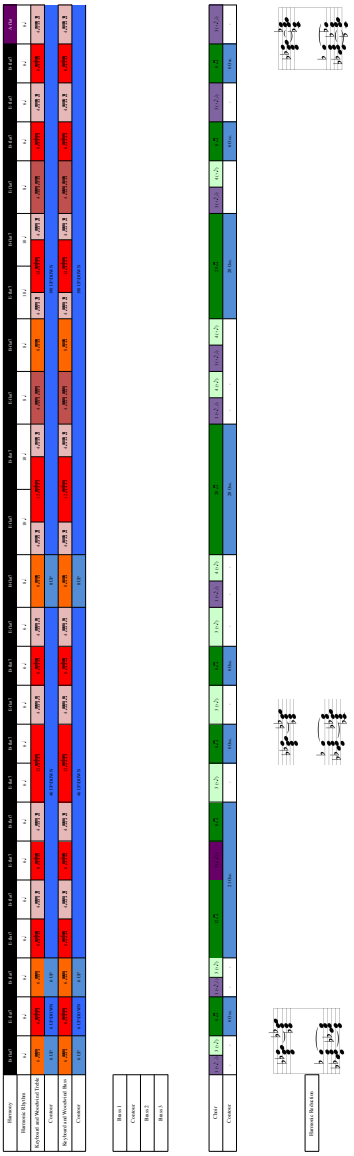

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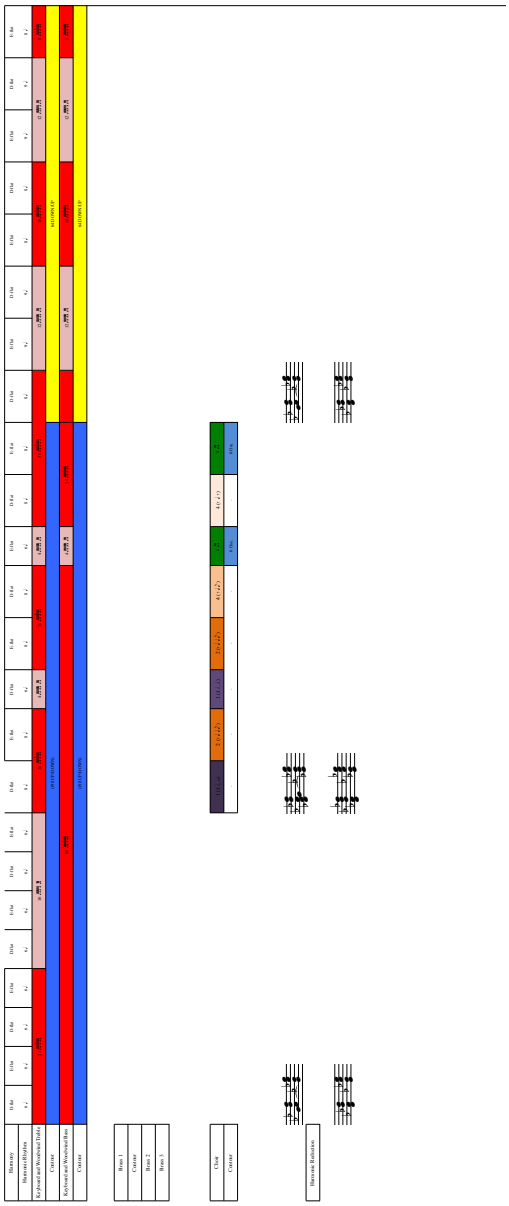

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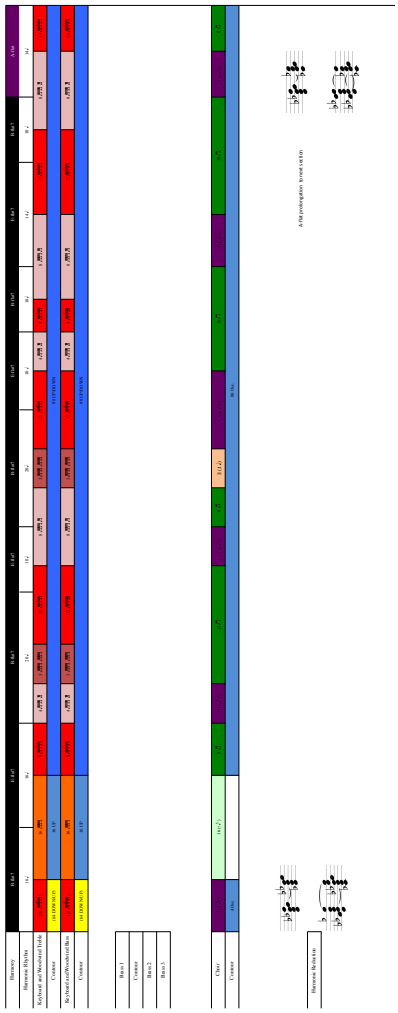
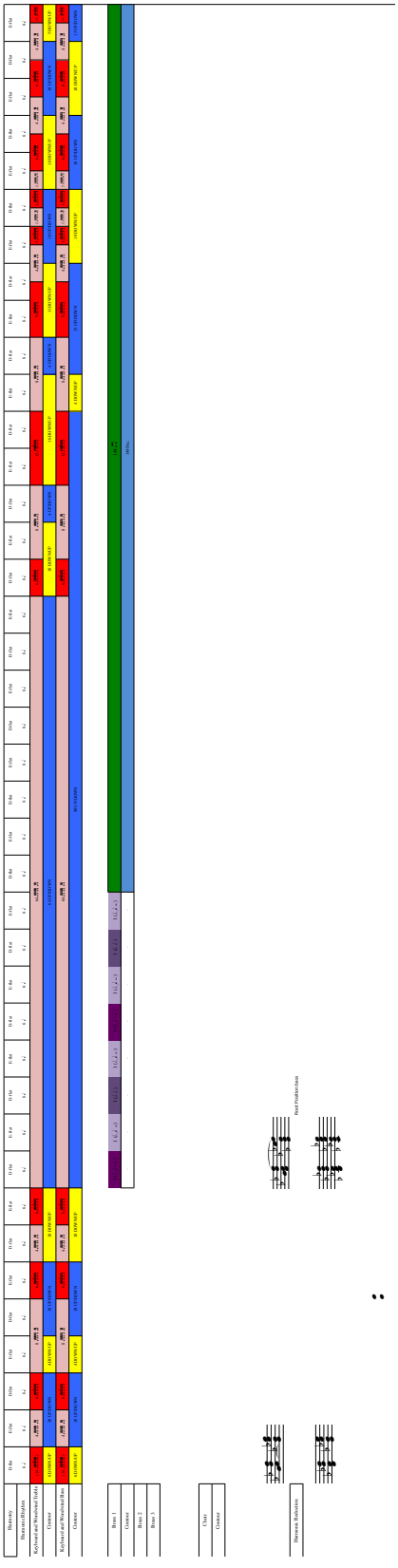
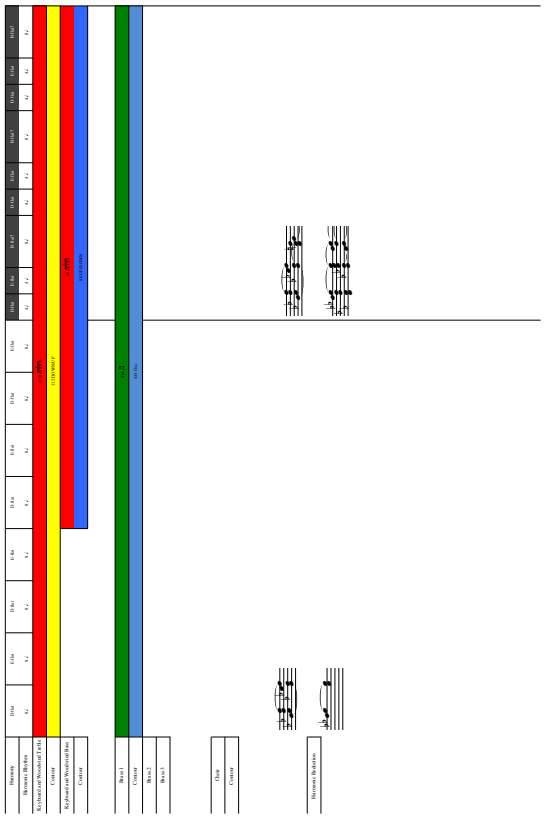


Section Six

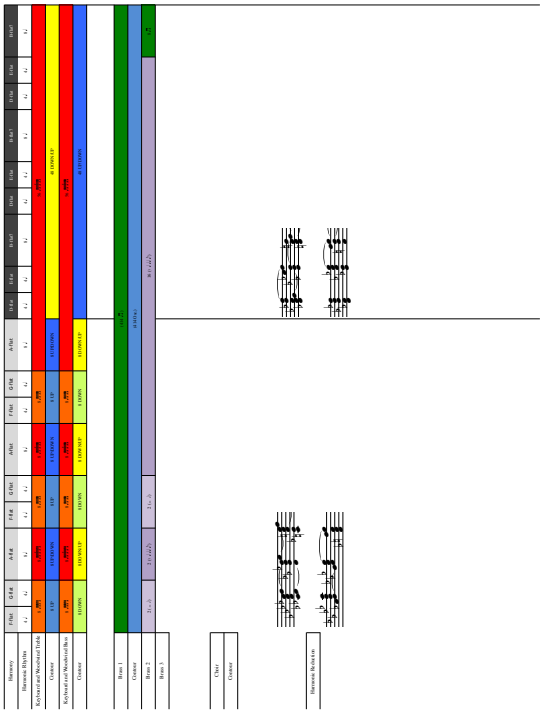


Section Seven

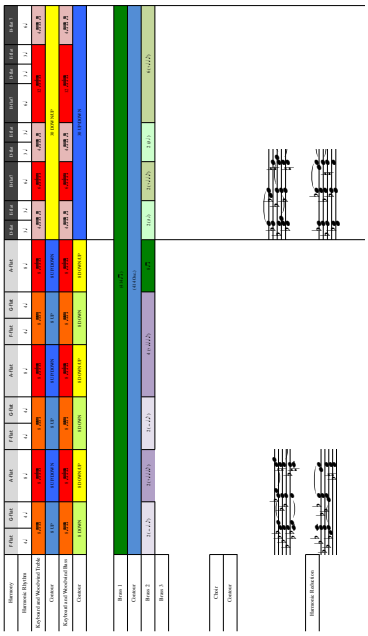
Section Eight



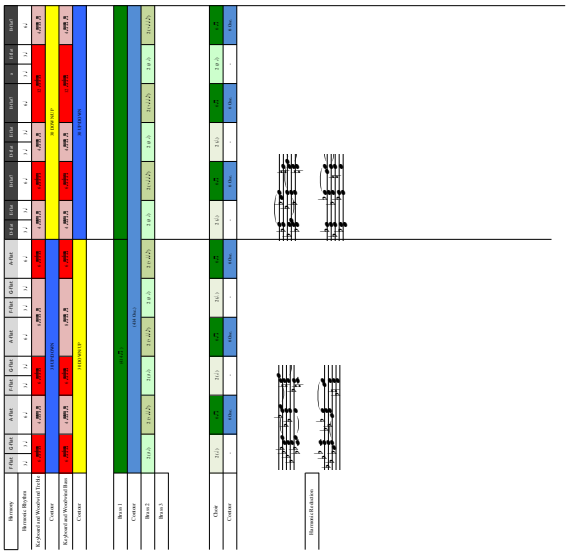
Sections Nine and Ten



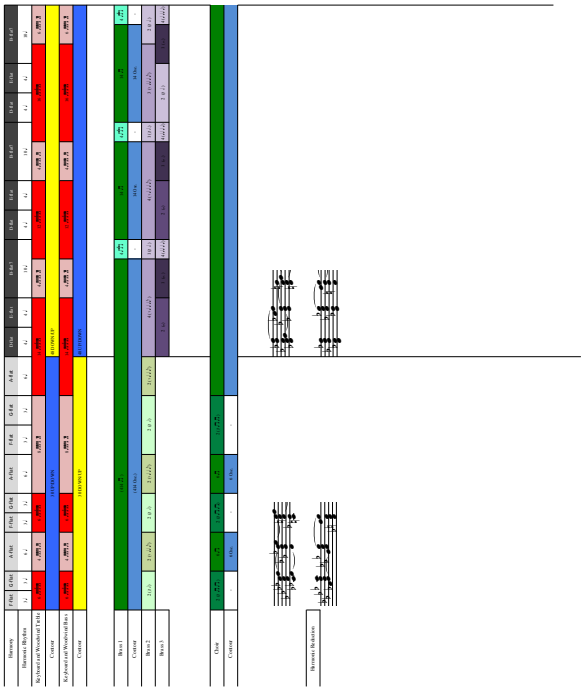
Sections Ten and Eleven



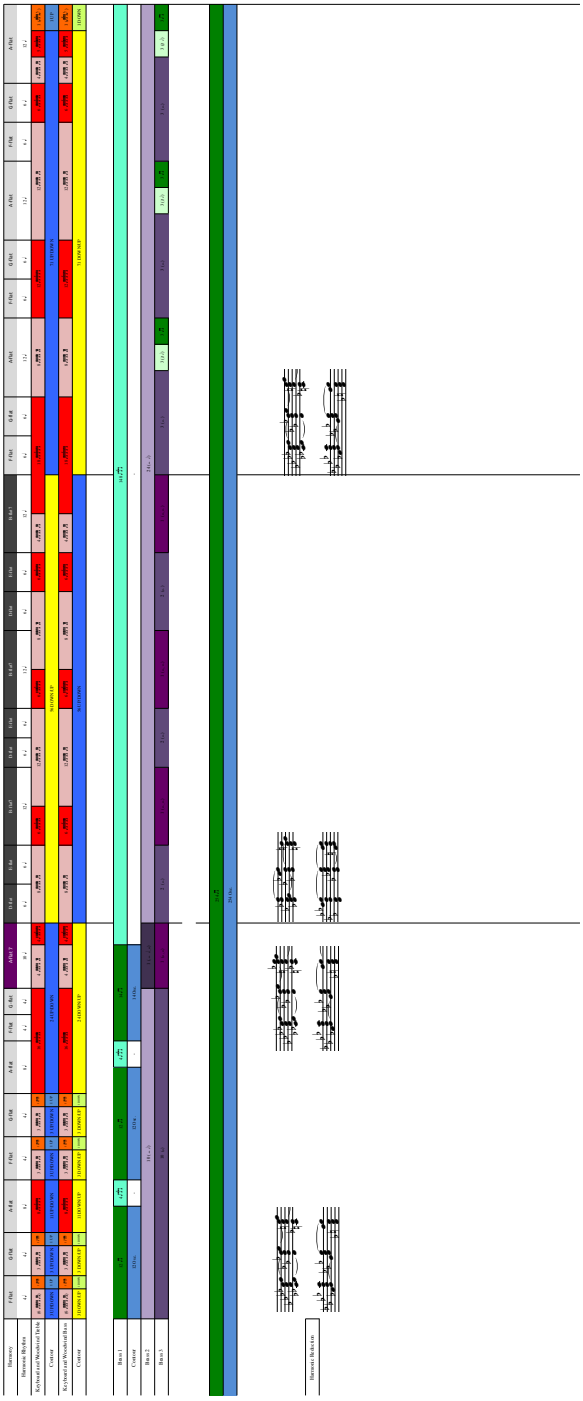
Sections Twelve and Thirteen



Sections Fourteen and Fifteen



Sections Sixteen and Seventeen



Sections Nineteen, Twenty, and Twenty-One

APPENDIX B

A NOTE ON COWBOY ROCK'N'ROLL USA, AN ORIGINAL COMPOSITION

In the last few years, one my artistic goals has been to write for the context in which my work will be performed, including the people who will be performing, the space it will be presented in, and the likely audience who will be attending. Like many composers, I like to work directly with performers in order to write for their unique skill sets. In the case of *Cowboy Rock'n'Roll USA*, I knew I was going to be working with a group of performers who have had years of training in performing progressive classical music of the twentieth and twenty-first centuries (i.e. Schoenberg, Cage, Stockhausen, Babbitt, Czernowin, Lachenmann). I also knew that these performers were comfortable improvising in that style. It wasn't desirable for me to write a prescriptive score that they should idealize and interpret. Rather, I wanted them to have agency over their own performance within the guidelines of the production that I composed.

I got the idea to work directly with the performers to create a large-scale dramatic musical work after I encountered the work of Robert Ashley (1930-2014), who worked in a similar way, especially in the opera for television, *Perfect Lives*. In fact, the same month I went to Germany to do *Cowboy*, I co-produced and performed in a live realization of *Perfect Lives* in Pittsburgh with

the NYC-based experimental music group Varispeed. They had created an Ashley-approved version with new music based loosely on the original music. Though the music in this performance was not the same as Ashley's original productions, which was made from collaborative process that allowed performers agency over the performance of the script and music, the work was undoubtedly Ashley's. As a point of reference, I could compare this to Larry David's famously scriptless television show, *Curb Your Enthusiasm*. Each episode of David's show starts with a general outline from which the actors improvise dialogue. Though David does not script the lines of his actors, the show is undeniably under his authorship.

I wanted to do something similar to Ashley or David with *Cowboy*. With this in mind, I though it would be an interesting conceptual circularity to base the narrative theme of *Cowboy* on the concept of free will. Thus, when I arrived in Stuttgart for the performance, I came with the concept and script for three scenes, two country songs that my character could sing, and a computer program developed by Brian Riordan and myself that performed randomized prerecorded samples of me speaking a variety of phrases about American exceptionalism, dreaming, and Midwestern life. I had also written a press release for the concert:

> KUNSTRAUM34 is pleased to present the world premiere of ***Im Traum: Cowboy, Rock'n'Roll, USA***; a musical production by American composer Matt Aelmore featuring Stuttgart's own Noise-Bridge duo and other guest musicians. Please join us on June 26 at Filderstraße 34, Stuttgart for the performance and following artist's reception.

Cowboy, Rock'n'Roll, USA is an experimental musical dream within a dream. The work centers on the character of an American plainsman disgruntled by today's perplexing political realities and in love with the sound of his own voice. In our era of political extremism and the global panopticon, rampant with warrantless international surveillance of private citizens, our hero rifles through his paranoid dreams to find sanctuary from the dreamy paranoia that encroaches his freedom. This production is made possible by a grant from the Dietrich School of Arts and Sciences at the University of Pittsburgh, USA; and by the generosity of KUNSTRAUM34 Stuttgart.

Kunstraum 34 is an art gallery a converted bomb shelter in Stuttgart. There are three rooms arranged in the space. The farthest room is a small lounge set up with a bar and half a dozen tables with chairs. The middle room is a larger, open space with a closet in along the back wall. The other far room is another larger, open space. All rooms in the gallery are separated by brick walls with small archways to allow traffic flow. When all performers had arrived for rehearsal, we decided on the following setup for audio/visual equipment:

Large room 1	Large Room 2	Lounge
dark and closed	main performance space	for the “Gunn Show”
one loudspeaker	six loudspeakers	one loudspeaker
microphone around table	mic hidden in closet	no microphone
	five mics in main space	
	projector for scene 3	

Fig. B.1 Layout of Kunstraum 34

Scene One, "The Gunn Show"

I conceived that scene one would involve my character, Ray Gunn, performing a café concert that would include me trying to relate local political controversies in Stuttgart to the local controversies that consume Ray Gunn in his hometown. Between Gunn's stories, spoken with a thick country accent, Ray would perform a verse of *Home on the Range* and his own song *America is an Idea* (see song chart below). The lyrics to *America is an Idea* were excerpted from Republican Congressman Brian Wild's *A Pledge to America*, which was a political manifesto signed by many political conservatives in the 2010 American election.

As Gunn performed for the audience in the café, the other performers would improvise from a German translation of Gunn's song. Given the text, the performers would improvise in a "contemporary classical music style" following their own speech rhythm of reading the text and occasionally speaking a word or two (see text below). This improvisation would occur in a distant room and would be transmitted into a microphone that could be channeled to a hidden speaker in the café, gradually distracting Gunn and drowning out his performance.

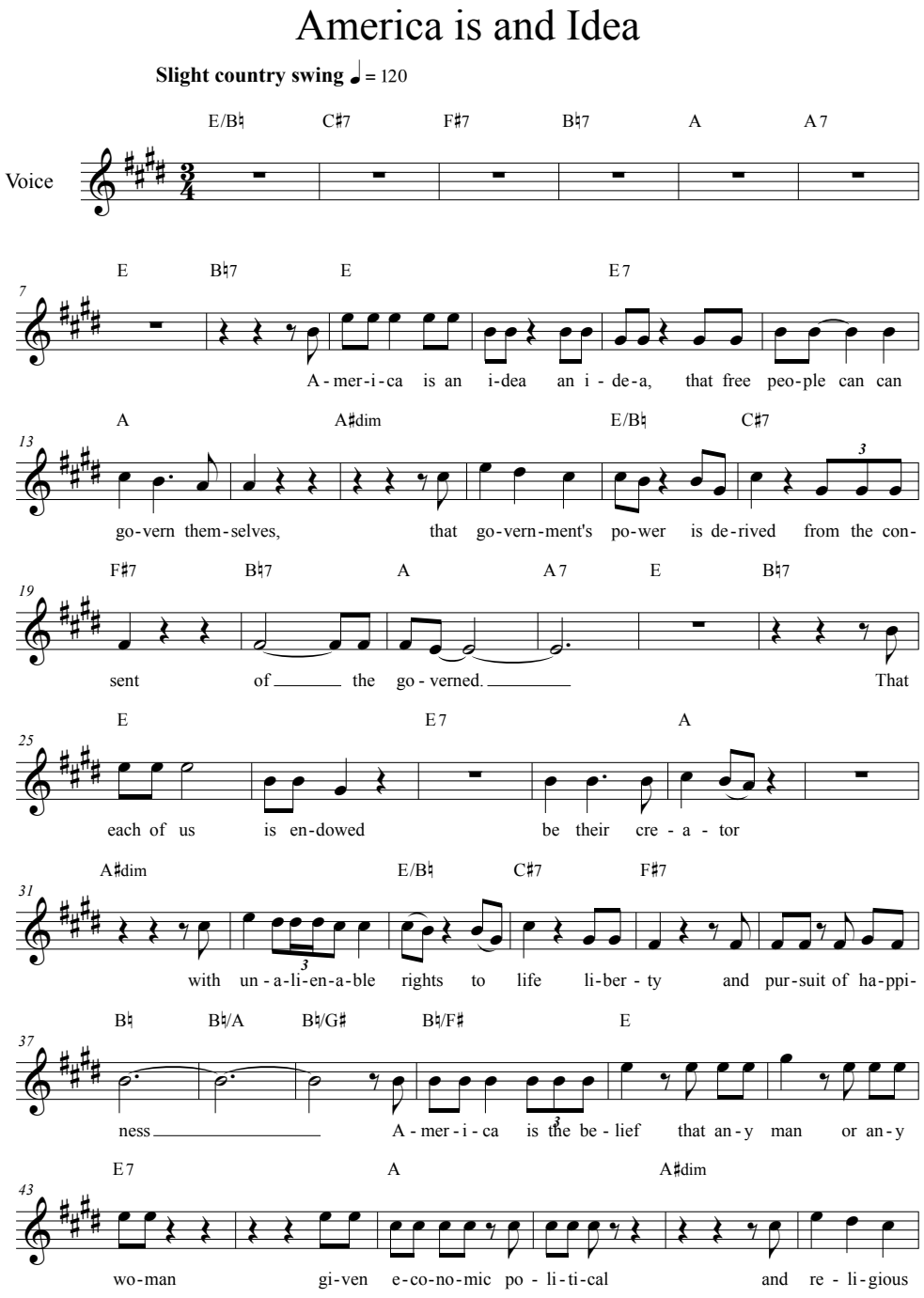


Fig. B.2 America is an Idea Song Chart

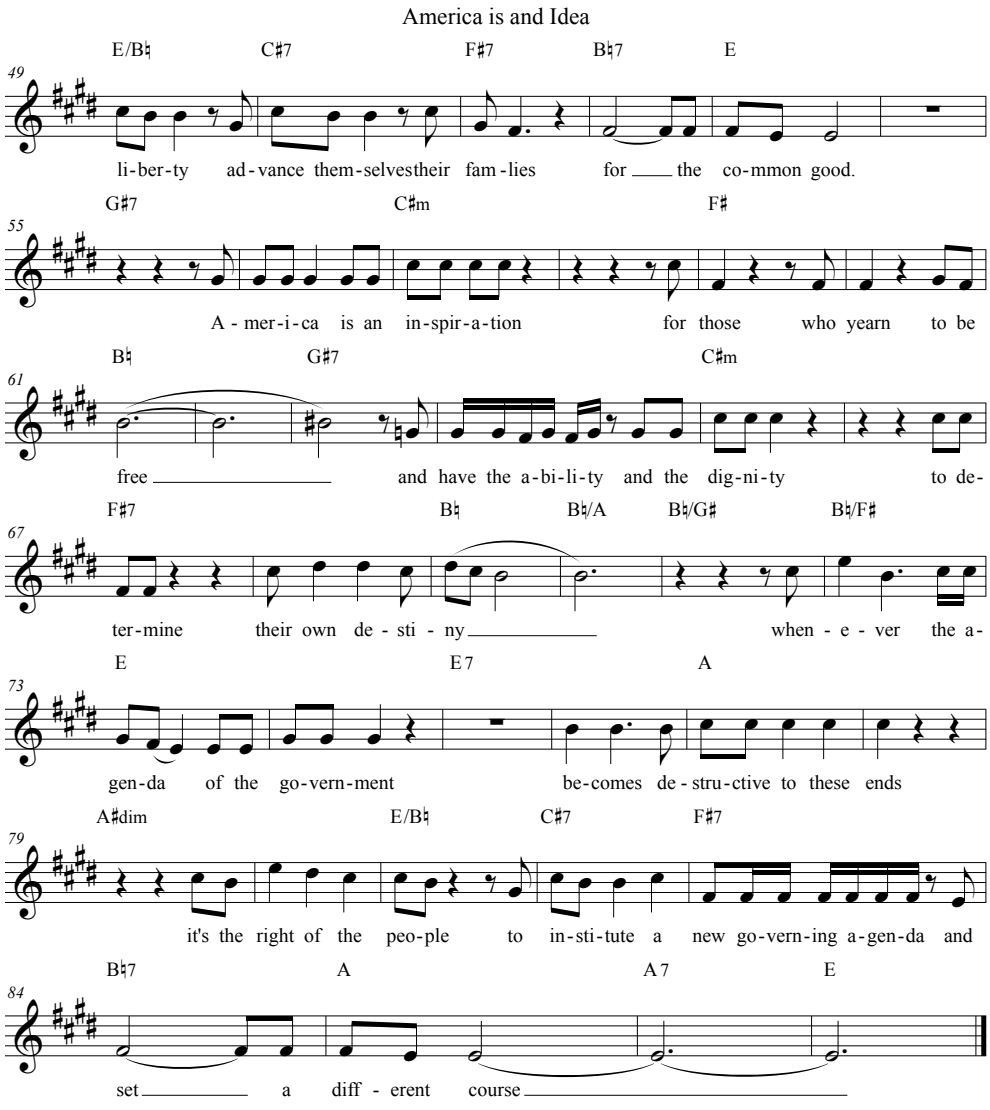


Fig. B.2 continued

Translation for improvisation (translated by Felix Behringer and Matt Aelmore)

Amerika ist ein Gedanke–der Gedanke, dass freie Menschen sich selbst regieren können, dass die Macht der Regierung com Konsens der Regierten augeht, dass jeder von uns von unserum Schöpfer mit unabdingbaren Rechten auf Leben, Freiheit und das Streben nach Glück erschaffen ist. Amerika ist die Überzeugung, dass jeder Mann und jede Frau–witschlaftliche, politische und religiöse Freiheit vorausgesetzt–sich selbst, ihre Familien und das Gemeinwhol voranbringen können.

Amerika ist eine Inspiration für diejenigen, die sich danach sehnen, zum einen frei zy sein und zum anderen nach der Fähigkeit und Würde, ihr eigenes Schicksal bestimmen zu können. Wannimmer der Kurz fer Regierung diese Werte beeinträchtigt, ist es das Recht des Volkes, einen neuen Regierungkurs einzuleiten und eine andere Richtung einzuschlagen…

Scene Two, "Free Will Dance"

The second scene would include all the performers. Ray Gunn would sing the title song *Cowboy Rock'n'Roll USA* (see song chart below), based on the comments section on from the Wichita Eagle newspaper. Christi Finn (soprano) would present a character that improvises virtuosic vocal solos on a predetermined text that I selected, which ended up being the following quote from the Wikipedia entry on "Free Will":

> "On the one hand, humans have a strong sense of freedom, which leads us to believe that we have free will. On the other hand, an intuitive feeling of free will could be mistaken. It is difficult to reconcile the intuitive evidence that conscious decisions are causally effective with the scientific view that the physical world can be explained to operate perfectly by physical law."

After presenting this idea to Christie, she decided that her character would be called "Lady Liberty" and would pose as the famous statue throughout the majority of the second scene. That is, until her arm got tired and she joined in Ray Gunn's final chorus. As for Felix Behringer (clarinet) and Lucas Jordan (flute), they performed as a duo speaking in German. I did not provide any text for this duo that would be called "Fritz and Franz." Instead, we collaborated on a series of questions that the duo would ask lady liberty regarding the existence of free will. From this script of five questions (see below), we developed short, musically stylized skits that would present the duo's discourse and ultimate questions for Lady Liberty, who would respond with the same text in different variations, which gradually morphed into the d-minor tonality of Ray Gunn's song.

Question 1

A: Wie Kann es den freien Willen geben, wenn Menschen standing beurteilt warden, je nachdem was Sie antworten,

B: (*intruding, but machine like)* was Sie denken

A: wie Sie sich entsheiden

B: was Sie denken

A: wie alt Sie sind,

B: was Sie denken

A: woher Sie kommen

B: was Sie denken

A: (*hurriedly)* wie viel Geld Sie haben, was Ihr sozialer Status ist?

Question 2

A: Wie kann es Freiheit geben, wen nuns die amerikanische Regierung ausspoiniert? Wie können wir wissen, ob uns Unternehmen ausspionieren? Haben wir Freiheit, wenn sogar die Inhalte unserer

B: Google-Suche

A: und unseres

B: Fecebook-Newsfeeds beispielsweises durch einen mathematischen Algorithmus manupuliert warden, der ebenfalls unseren ganzen Internetverlauf aufzeichnet, oder wenn Freiheit manipuliert warden kann, dadurch wie viel bezahlt, damit

A: Google

B: oder

A: Facebook seine Anzeigen verwendet und somit entscheidet, was wir sehen?

Fig. B.3 Questions for Lady Liberty in Scene Two

Question 3

A: gibt es in der Musik einen freien Willen, oder zwingen wir der Musik die Möglichkeit des freien Willens auf?

B: Aber dann, wie kommt es, dass je eingeschränkter man in ihr ist, desto mehr Freiheit man zu spüren beginnt un gleichzeitig je mehr Freiheit man ihr hat, umso eingeschränkter man sich füult?

A: Wie kann überhaupt von Freiheit die Reide sein,

B: (*interrupting*) wenn das im Leben ähnlich ist?

Question 4

(A and B together in as chant-like manner as possible)

Wie kann es den freien Willen geben, wenn der Glaube an Gott von Gottes wohlmeinenden Eifersucht gegenüber anderen Religionen diktiert wird? Wie kann es sein, dass Gott uns alle liebt, will aber, dass wir predigen, die moisten, die nicht an ihm glauben, seien falsch? Wenn Gott uns der freie Wille gibt, wessen freien Willen wird er unterstützen?

(*mechanical, though still chant-like and following the cowboy melody*)

Wie können wir einen freien Willen haben ohne den freien Willen unserer Nächsen zu stören?

Question 5

A: Kann man seinen freien WIllen ausdrüken, wenn man nur zwei politische Perteien zure Verfügung hat? Hat man mehr freien Willen, wenn es zehntausende davon gibt? Ein Viertel der Bevölkerung entscheidet sich ihren freien Willen nicht zu außern, ist die Demokratie also frei? Beschränkt die Mehrheit nicht den freien Willen der Minderheit–

B: –quasi wie die Minderheit mit der Mehrheit in einer Diktatur macht? Was ist die Freiheit einer Diktatur?

A+B: Auf einer Skala von eins (*show 1 with hands*) bis zehn (*show 10 with hands*), gibt es überhaupt Freiheit?

Fig. B.3 Continued

Cowboy Rock'n'Roll USA

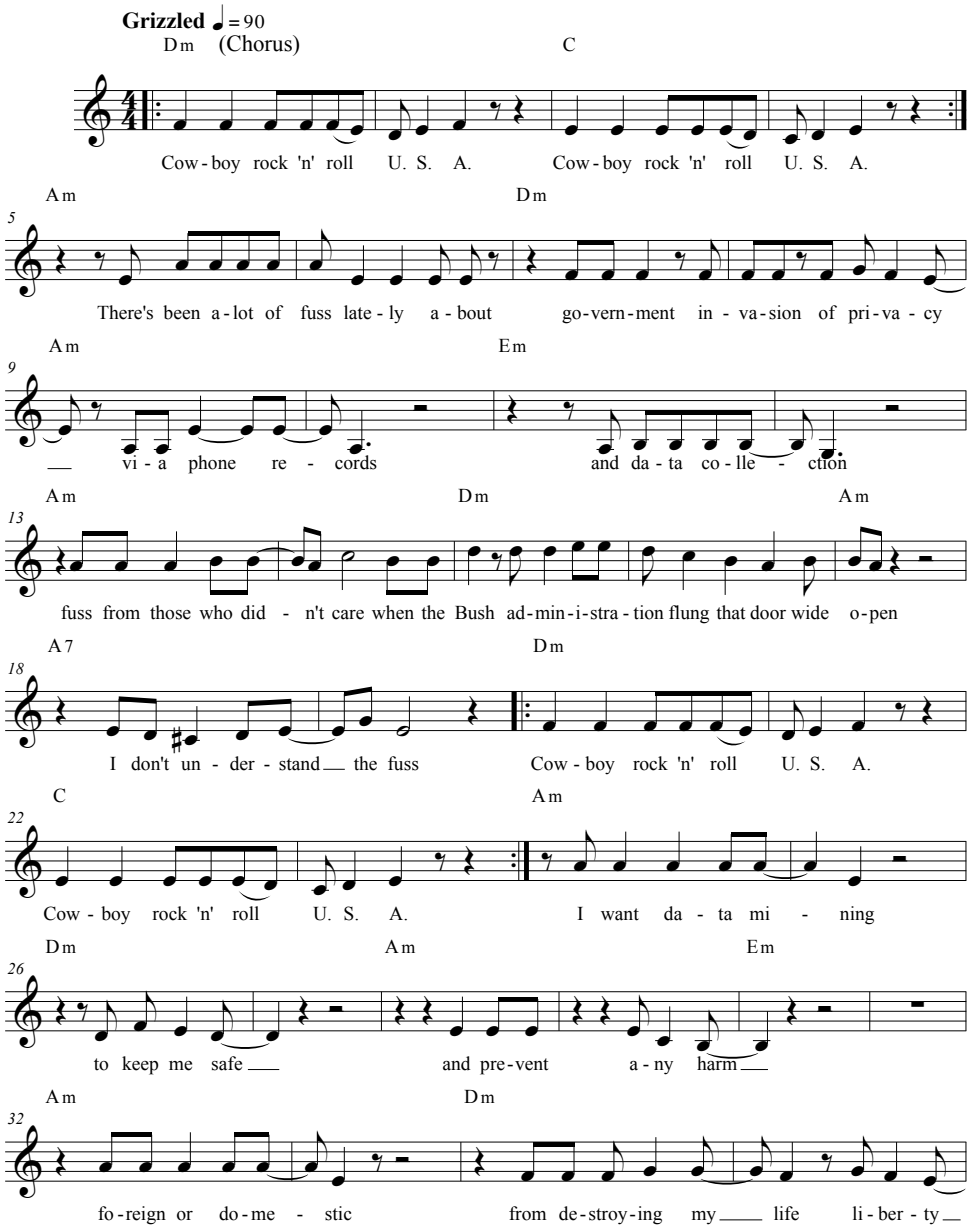


Fig.B.4 Song Sheet for *Cowboy Rock'n'Roll USA*

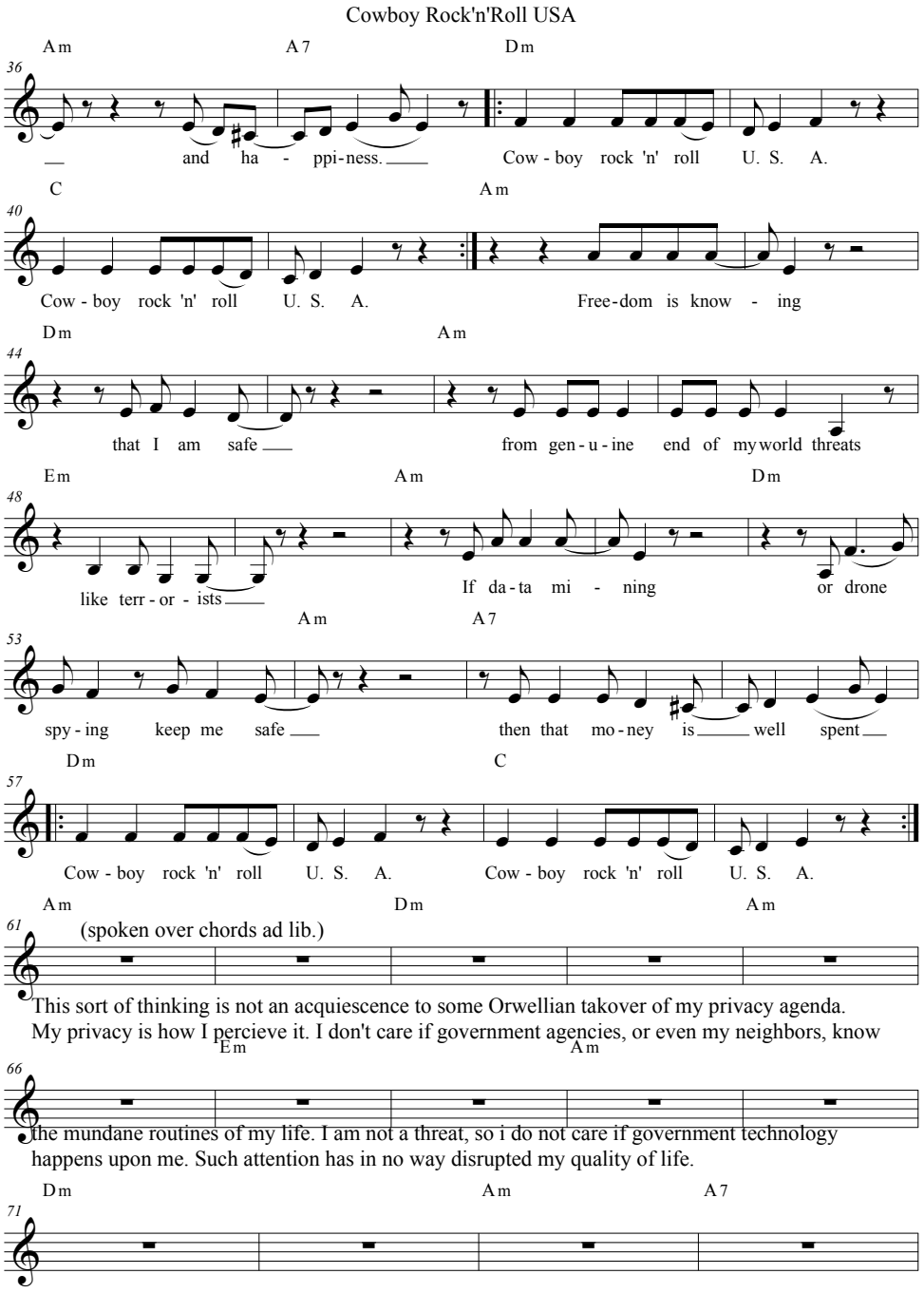


Fig.B.4 continued

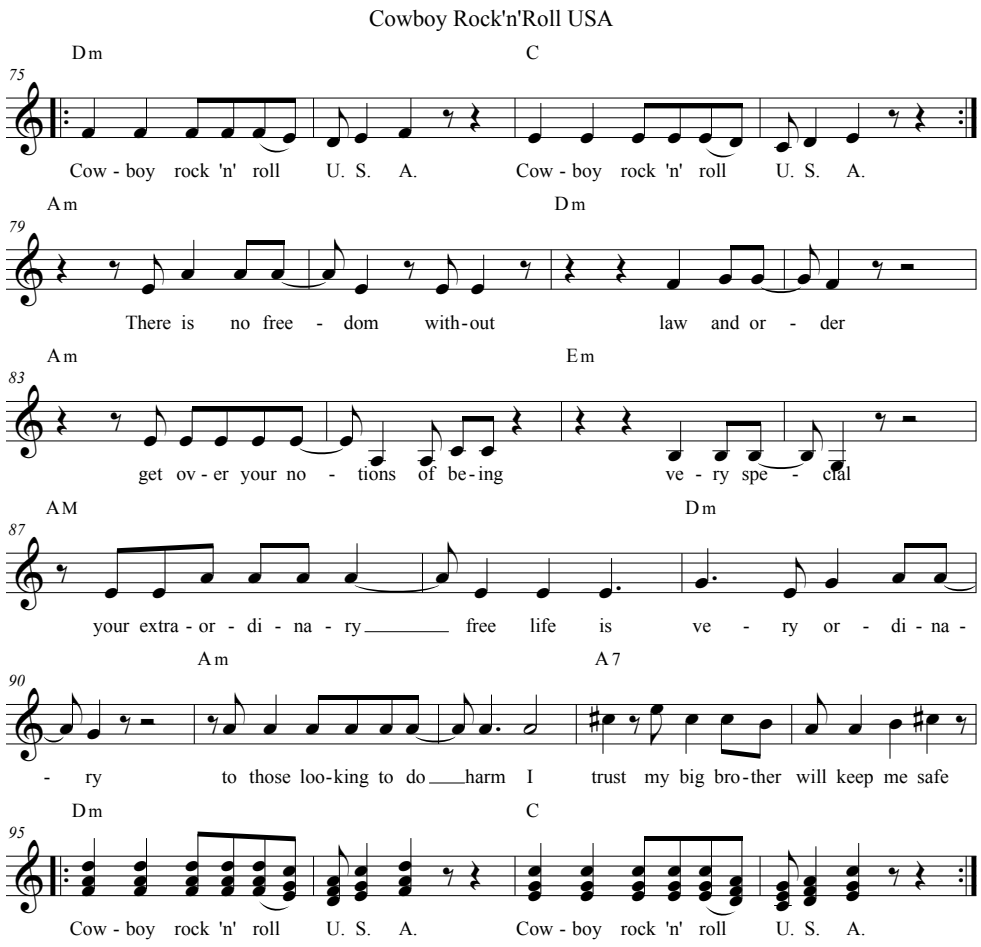


Fig.B.4 continued

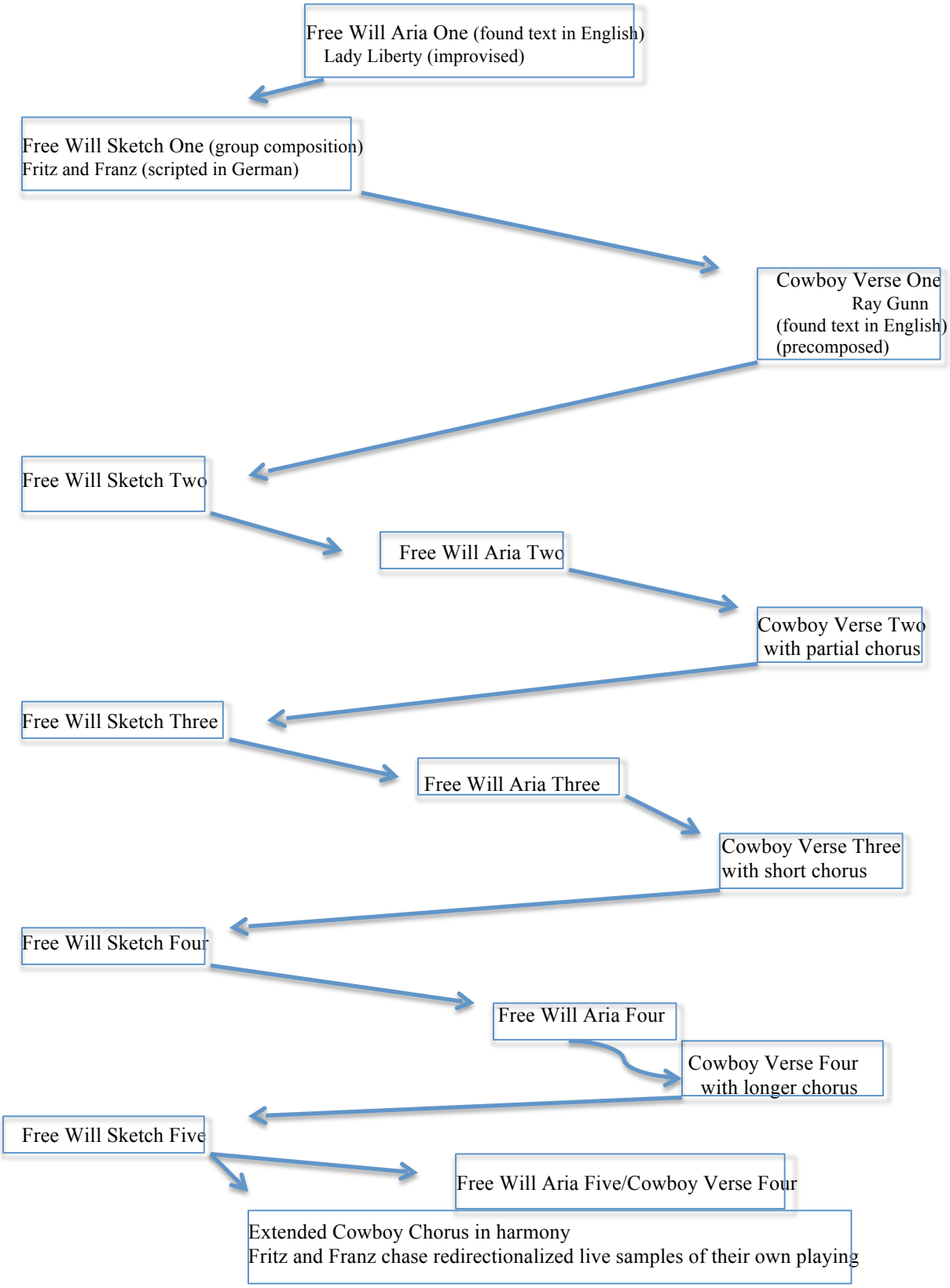


Fig. B.5 Flowchart of Action in Scene Two

Throughout the second scene, Ray Gunn's performances of *Cowboy* moved through the performance space, gradually crossing the space the Lady Liberty, Fritz, and Franz occupy. Gunn begins his first verse at the threshold of the middle room. Gunn's choruses were cut off by Fritz and Franz musical sketches, and Gunn's verses gradually encroach on Lady Liberty's arias. By the end of the scene, Lady Liberty and Ray Gunn had joined forces in singing the chorus of *Cowboy*. Fritz and Franz performed short licks into the microphones near them, which are then channeled into individual loudspeakers surrounding the audience. Fritz and Franz paranoically chased the sound of their own instruments. The scene ends as Ray Gunn diverted himself from Lady Liberty, layed down his guitar, and entered the door at the back of the room with light flooding from its cracks.

Scene Three, "Ich viel keine Freiheit mehr."

The script for the final scene was written by me and consists of a call and response between the disembodied voice of Ray Gunn, and a machine-like unity of the three other characters. The text, made of non-sequitur existential babble regarding free will, was translated, intentionally poorly, into German using Google Translate. This scene featured the improvisation of Isai Angst, the sound/light technician, who was ultimately called "Uncle Sam." I intended for the processing of all voices to be in the control of Uncle Sam, who would be free to improvise their directionality in the space, as well as add any effects to these voices. Hidden in the far wall, I performed Ray Gunn's part into a microphone as Lady Liberty, Fritz, and Franz united in a droning, liturgical response.

As a projector became available, a slideshow was made from the text translations. As Gunn's voice spoke in English, a faulty German translation was projected. As Lady Liberty, Fritz, and Franz spoke in German, the original English was projected. Below is the script for this scene.

Ich will keine Freiheit mehr.

If you stop wanting freedom you'll have it.

Aber Dann werde ich keine Kontrolle haben.

Then maybe you should want just enough.

Wie viel kann ich haben?

Nobody knows.

Dann brauche ich mir über meine Freiheit keine Sorgen machen?

Freedom is that you'll worry about what you worry about….

Hör auf mich zu verwirren. Über was machen Du Dir Sorgen?

Yes.

Was ist das Über?

There.

Da draußen?

Yes.

Über?

Yes.

Die Präposition?

Absolutley. A preposition is the assumption of an other.

Welche andere?

The other and its position.

Was ist die Stellung vom Über?

Face the other direction.

Was, wenn ich nicht will?

Ideas are not causes but effects. They haven't got a position. If ideas had a position they would be bodies. Bodies bodies cause change. The position of about is outside the body. Worrying about freedom is that you'll worry about what you worry about what you worry about what you worry about what you worry about what.

Fig. B.6 Script for Scene Three

Was, wenn ich die andere Richtung nich einschlagen möchte?

Freedom is that you can hear from all directions, though you may only see in one. Smell from many, taste from one. Touching is from all directions but, like taste, dependent on the direction you are facing.

Was ist mit meinen Gedanken?

Freedom is an idea. An idea is not a sense. An idea that is both affected and caused by the sense. You see in one direction. And hear in many. You smell in all directions and taste like you see. Touch is from any direction, but taste depends on the direction you face.

Was über Über?

About is what you don't sense or sense lightly. About is a preposition that defines its own position. This position is defined about your senses, which are not effective enough to find the location of the preposition. Often propositional phrases contain information that, regarding the position or referent of its subject, is critical. However the relevance of this critique is subjective, as subjective as your senses. Freedom is an idea. An idea is not sense. Your body through your ideas eliminate the possibility of an absolute freedom. The only freedom that is sensible is that which is imposed on you other by bodies affected by ideas.

I was sleeping and I was doing a puzzle. And as I was sleeping the puzzle appeared to be you. You were the puzzle and the puzzle was sleeping doing a puzzle. And the cowboy man said to me wake up and eat breakfast.

Throughout the final scene, I performed a computer program that sounded samples of me speaking from four banks. Each bank contains dozens of samples that are grouped by their subject matter: conservative propaganda, dreaming, bad German translations, Ray Gunn's stories. Each band had a number of sample durations that I categorized as long, medium, and short. Each sample was programmed to flow to other specified samples based on what sounded most "musical" or on what might continue the previous sentence/phrase well. The sample-channeling program was created by Brian Riordan in MAX/MSP. In the performance of Scene Three, samples (or multiple streams of samples) were projected from the loudspeakers in the adjoining rooms, spatialized around the audience. Below are the flow charts for all of the samples and a screenshot of the program interface.

B1L01: B1L02, B1S02-B1S10, B1S13
B1L02: B1L04, B1S01-B1S13
B1L03: B1L01, B1L04, B1L05, B1S02-B1S09, B1S11-B1S13
B1L04: B1L01, B1S01, B1S04-B1S09, B1S11, B1S13
B1L05: B1S02-B1S08, B1S12, B1S13
B1S01: B1S02, B1S04, B1S06, B1S07, B1S08, B1S10, B1S11
B1S02: B1L03, B1S04, B1SO6-B1S09, B1S11
B1S03: B1L04, B1S01, B1S04, B1S06-B1S09, B1S12
B1S04: B1S01, B1S03, B1S05, B1S08-B1S13
B1S05: B1L01, B1L04, B1L05, B1S01-B1S03, B1S06, B1S07, B1SO9, B1S12, B1S13
B1S06: B1L01, B1L04, B1LL05, B1S01, B1S02, B1S04, B1S08, S1S09, B1S11
B1S07: B1L02, B1L05, B1S01, B1S05, B1S13
B1S08: B1S01, B1S02, B1S07, B1S10, B1S12
B1S09: B1L04, B1L05, B1S04, B1S04, B1S07, B1S10-B1S12
B1S10: B1S01, B1S02, B1S04-B1S06, B1S08, B1S12
B1S11: B1L01, B1S01, B1SO2, B1S08, B1S12
B1S12: B1S01-B1S13
B1S13: B1S01-B1S13

B2M01: B2M03, B2M07, B2S02-B2S05
B2M02: B2M03, B2M04, B2S02, B2S04, B2S05
B2M03: B2M02, B2M06, B2S02-B2S05
B2M04: B2M06, B2S01-B2S05
B2M05: B2M02, B2M04, B2S01-B2S05
B2M06: B2MO2, B2M03, B2M05, B2S02-B2S04
B2M07: B2M05, B2S01, B2S04, B2S05
B2S01: B2M01, B2M03, B2M07, B2S03-B2S05
B2S02: B2M02, B2M06, B2S01-B2S05
B2S03: B2S01-B2S05
B2S04: B2ALL
B2S05: B2M01, B2M04, B2S01-B2S04

B3: ALL TO ALL

B4L01: B4M01, B4M03, B4M04, B4S01, B4S03, B4S06-B4S08, B4S10, B4S14
B4L02: B4M01, B4M03, B4S01-B4S10
B4M01: B4M02, B4S01-B4S10
B4M02: B4M03, B4M04, B4S02-B4S09
B4M03: B4M04, B4S01, B4S03, B4S04, B4S09, B4S10, B4S13, B4S14
B4M04: B4L01, B4S02-B2S06, B4S09-B4S13
B4M05: B4S05, B2S09, B4S11, B4S14
B4S01: B4S03, B4S08
B4S02: B4M05, B4S03-B4S05, B4S07, B4S09, B4S10, B4S12-B4S14
B4S03: B4L02, B3M03, B4M04, B4S01, B4S05, B4S06, B4S09, B4S10, B4S13

Fig. B.7 Banks One through Four, Possible Sample Flows

B1S04: B4L02, B4M01, B4M04, B4S02, B4S03, B4S06-B4S08, B4S10-B4S13
B4S05: B4M04, B4S01, B4S02, B4S07, B4S09-B4S12, B4S15
B4S06: ALL B4 EXCEPT L
B4S07: ALL B4 EXCEPT L
B4S08: ALL B4 EXCEPT L
B4S09: B4S02, B4S05, B4S06, B4S10, B4S11, B4S13, B4S14
B4S10: B4M05, B4S03, B4S05
B4S11: ALL B4
B4S12: ALL B4
B4S13: ALL B4
B4S14: ALL B4
B4S15: ALL B4

Fig. B.7 continued

This production did not answer the question of free will, but uses the theme of free will as a conceptual extension of how *Cowboy Rock'n'Roll* was created. Before the production began, I composed the scripts used to create the music in scenes two and three, Ray Gunn's two country songs, compiled the texts and improvisational framework for Lady Liberty's arias, and developed a possible three scene structure to organize the performance. This is in addition to the computer program, made collaboratively between Brian Riordan and myself.

Beyond these pre-production conceptions, the remainder of the music, script, direction, and audio/visual elements were arrived at through the direct collaboration of all performers involved. The performers' agency over their own character's role in the performance is one example of how the concept of free will was extended into the production. Another element of agency persisted in the performers musical improvisations that, while agreed upon stylistically by the consensus of the entire ensemble, ultimately rested on the assertion of the performer in concert. My role in the production had many parts: creating the concept of how the performers would interact to create the production, creating the three scene structure on which it would built, performing the role of Ray Gunn, developing a computer program featuring samples of my own voice, writing/finding the vast majority of the script, and, of course, composing my own original music.

Although I organized and led most of the discussions in the production of this work, the full performing ensemble decided upon several musical and theatrical decisions. In *Cowboy Rock'n'Roll USA* I was both composer of several musical works and author of a collaborative practice. The guiding principle of collaborative practice was that all members of the ensemble

have agency over how their characters were developed, and expressed themselves musically within the three-scene framework and scripts that I precomposed in order to organize the production. A video documentation of the full performance can be found at https://youtu.be/YeV11J2Y6n0.

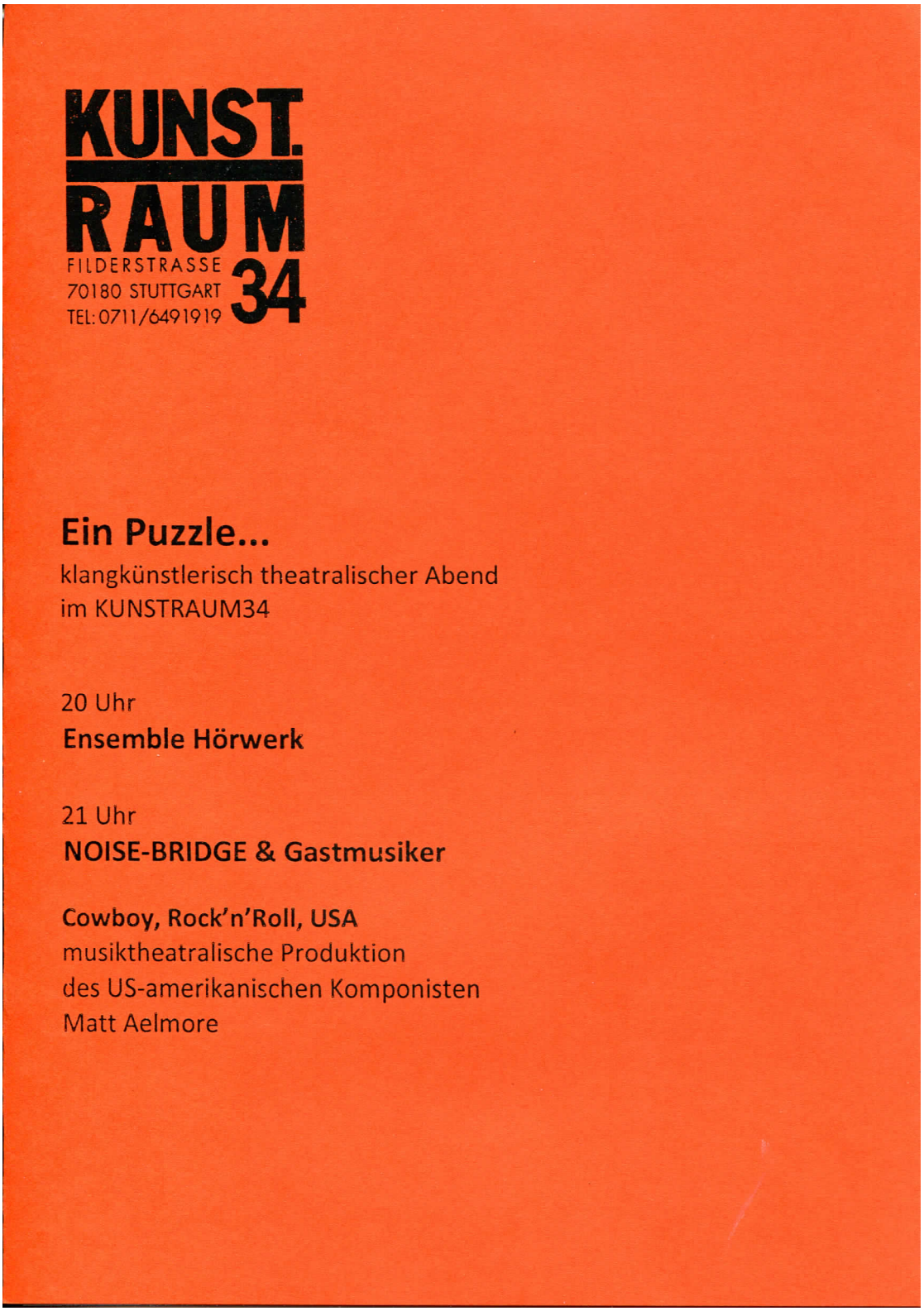


Fig. B.8 Program from Premiere

Ensemble Hörwerk

CHRISTIE FINN	Gesang
GABRIELE LESCH	Gesang
NATASHA LÓPEZ	Gesang
N. ANDREW WALSH	Gesang
RICHARD SPAETH	Streichlaute, Entwicklung

Das Ensemble Hörwerk erkundet wie Töne "von selbst" - ohne Konstrukt eines Tonsystems - zusammenklingen. Im Hören stimmen die Musiker exakt Ton für Ton in ihr „Hörwerk" ein und formen eine komplexe Klangskulptur von großer Intensität und Tiefe. Dabei gelingt es ihnen bis zu 51 Töne pro Oktave zu unterscheiden.

Cowboy, Rock'n'Roll, USA

MATT AELMORE	Ray Gunn	Konzept, Komposition, Sprecher, Gitarre
CHRISTIE FINN	Lady Liberty	Sopran
FELIX BEHRINGER	Fritz	Klarinetten
LUCAS JORDAN	Franz	Flöten
ISA ANGST	Uncle Sam	Elektronik, Licht

Cowboy, Rock'n'Roll, USA ist das Experiment eines musikalischen Traums. Das Werk stellt den Charakter eines amerikanischen Hinterwäldlers in den Mittelpunkt, der aufgebracht ist von den für ihn so verwirrenden politischen Realitäten und gleichzeitig verliebt in seine eigene Stimme. In der heutigen Zeit von politischem Extremismus und globaler Überwachung durchwühlt unser Held seine Träume um einen Zufluchtsort fernab von seiner freiheitsberaubenden Paranoia zu finden.

Diese Produktion wird ermöglicht durch die finanzielle Unterstützung der **Dietrich School of Arts and Sciences der University of Pittsburgh, USA**. Vielen Dank!

Fig. B.8 continued

Der Komponist **Matt Aelmore** wurde im US-Bundesstaat Kansas im Mittleren Westen geboren und ist in einer politisch und religiös radikal konservativen Umgebung aufgewachsen. Aelmores Herkunft hat großen Einfluss auf sein künstlerisches Schaffen und ist Motivation für seine surrealen theatralischen Produktionen.
Aelmore erwarb einen Bachelorabschluss in Komposition und Musiktheorie an der Wichita State University in Kansas und einen Masterabschluss in Komposition an der Manhattan School of Music in New York. Momentan schreibt er seine Ph.D. Dissertation an der University of Pittsburgh im US-Bundesstaat Pennsylvania.

NOISE-BRIDGE ist ein Klarinette-Sopran Duo, ansässig in Stuttgart, das sich der Aufführung von Werken des 20. und 21. Jahrhunderts widmet, sowie Werke selbst in Auftrag gibt. NOISE-BRIDGE legt besonderen Wert auf die aktive Zusammenarbeit mit Komponisten. Das Duo hat sich 2009 in New York gegründet, wo sich der deutsche Klarinettist Felix Behringer und die amerikanische Sopranistin Christie Finn im Studiengang für Zeitgenössische Performance (Contemporary Performance Program) an der **Manhattan School of Music** kennenlernten. Dort trafen die beiden den Komponisten Matt Aelmore, der für das Duo bereits mehrere Stücke geschrieben hat und nach dessen Konzept die Produktion des heutigen Abends **Ein Traum... Cowboy, Rock'nRoll, USA** erarbeitet wurde.
Seit der Gründung ist das Ensemble an Orten wie **The Tank** (New York), **The Gershwin Hotel** (New York), **An Die Musik Live!** (Baltimore), **Elastic Arts** (Chicago) und mehrfach im Münster St. Paul in Esslingen aufgetreten. Im März 2013 war NOISE-BRIDGE Gast an der Northwestern University in Chicago und dort an einem Kolloquium der Kompositionsstudenten beteiligt.
NOISE-BRIDGE arbeitet regelmäßig mit Komponisten, viele von ihnen kooperierten mit dem Duo an den **Darmstädter Ferienkursen für Neue Musik** 2010 und 2012, wo das Duo auch **„open space"** Workshops durchführte.

Christie Finn hat bereits mit vielen zeitgenössischen Ensembles in Europa, wie dem Asko Schönberg Ensemble (Niederlande), dem VocaalLAB (Niederlande), dem Forum Neue Vokal Musik (Deutschland), dem Hezarfen Ensemble (Istanbul, Türkei), der Ligeti Academy (Niederlande), Oerknal! (Niederlande) sowie mit verschiedenen Ensembles in New York gesungen. Vor ihrem momentanen Studium im **Studio für Neue Musik, Theater und Stimmkunst** bei Frank Wörner in Stuttgart, hat sie im Studiengang für Zeitgenössische Performance an der

Fig. B.8 continued

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Fig. B.8 continued

Manhattan School of Music in New York studiert. Außerdem hat sie einen Bachelor und Master in klassischem Gesang.

Felix Behringer begann sein Klarinettenstudium als Jungstudent an der **Zürcher Hochschule der Künste**, danach wurde er für den Master in Zeitgenössischer Performance an die **Manhattan School of Music** in New York aufgenommen. Im Anschluss war er bis Oktober 2012 Stipendiat der renommierten **Internationale Ensemble Modern Akademie** in Frankfurt. Neben der künstlerischen Arbeit mit NOISE-BRIDGE ist Behringer projektweise als in mehreren anderen Ensembles tätig. In seinen eigenen Projekten versucht er Konzerten u.a. durch den interdisziplinären Austausch von verschiedenen Künsten eine neue Form zu verleihen.

Der in Brasilien geborene Flötist und Komponist **Lucas Jordan** fühlt sich als vielseitiger und neugieriger Musiker in allen musikalischen Sparten heimisch. Neben herkömmlichen Konzerten ruft er innovative Projekte ins Leben, welche die Konzerttraditionen in Frage stellen („Wenn heute sich mit gestern vermischt" und „d♯Gents | re:staging music"). Vergangenen März machte er erstmals eine Tournee in Brasilien mit Konzerten und Workshops zum expressiven und virtuosen Flötenspiel. Als Komponist arbeitet er im Moment für den Dokumentarfilm One Girl und an einem Violinkonzert.
Seine Studien schloss er an der **Royal Academy of Music**, London bei dem Flötisten William Bennett und an der **Zürcher Hochschule der Künste** bei Matthias Ziegler (Flöte) und Isabel Mundry (Komposition) ab. Jordan wurde mehrfach von der Stiftung LYRA unterstützt.

Der Schweizer **Isaï Angst** widmete sich im Verlauf seines Klarinettenstudiums an der **Zürcher Hochschule der Künste** vermehrt der live-elektronischen Musik. Seit zwei Jahren ist er am Forschungsprojekt zur Weiterentwicklung der **Sensor Augmented Bassclarinet am Institute for Computermusic and Sound Technology** (ICST) in Zürich beteiligt. Zudem ist er als Computermusiker im **Tonhalle Orchester** und dem **Collegium Novum** Zürich tätig.
Als Klarinettist tritt Isaï Angst neben seiner klassischen Konzerttätigkeit regelmäßig mit seiner eigenen Band dem **Freylax' Orkestar** aus Basel auf, die sich mit Einflüssen aus Klezmer, Balkan und Funk in keine Schublade stecken lässt und längst in der Schweiz und dem benachbarten Ausland bekannt ist.

Fig. B.8 continued

Übersetzung der Songs

America

Amerika ist ein Gedanke – der Gedanke, dass freie Menschen sich selbst regieren können, dass die Macht der Regierung vom Konsens der Regierten ausgeht, dass jeder von uns von unserem Schöpfer mit unabdingbaren Rechten auf Leben, Freiheit und das Streben nach Glück erschaffen ist. Amerika ist die Überzeugung, dass jeder Mann und jede Frau - wirtschaftliche, politische und religiöse Freiheit vorausgesetzt - sich selbst, ihre Familien und das Gemeinwohl voranbringen können.

Amerika ist eine Inspiration für diejenigen, die sich danach sehnen, zum einen frei zu sein und zum anderen nach der Fähigkeit und Würde, ihr eigenes Schicksal bestimmen zu können. Wann immer der Kurs der Regierung diese Werte beeinträchtigt, ist es das Recht des Volkes, einen neuen Regierungskurs einzuleiten und eine andere Richtung einzuschlagen ....

[aus **The Pledge to America – The Pledge to America** wurde als Wahlprogramm der Republikaner im Zuge der Kongresswahlen im Jahr 2010 von Brian Wild verfasst.]

Cowboy, Rock'n'Roll, USA

In letzter Zeit gab es einen großen Aufruhr wegen der Verletzung der Privatsphäre durch Telefonaufzeichnungen und Online-Datenspeicherung der Regierung – einen Aufruhr von seiten derjenigen, die sich damals nicht gestört haben, als George W. Bush's Regierung dieses Tor weit aufstieß. Ich verstehe diese Wichtigtuerei nicht.

Ich möchte die Auswertung riesiger Datenmengen, damit ich mich sicher fühlen kann und um ein mögliches Unheil im In - oder im Ausland vorzubeugen, welches mein Leben, meine Freiheit oder mein Glück beeinträchtigen könnte. Freiheit ist zu wissen, dass ich sicher bin vor Weltuntergangsbedrohungen wie Terroristen. Wenn diese Datenauswertung oder Dronenspionage mir den Luxus ermöglicht, mein Leben zu genießen, dann sei es so und das sind gut investierte Steuergelder.

Fig. B.8 continued

Diese Denkweise ist nicht die Duldung einer Orwell'schen Adaption meiner Idee von Privatsphäre. Privatsphäre ist reine Ansichtssache. Mir macht es nichts aus, wenn Regierungsbehörden (oder sogar meine Nachbarn) über die alltäglichen Routinen meines Lebens Bescheid wissen. Ich bin keine Bedrohung, also kümmert es mich nicht, wenn mich diese Vorgehensweise der Regierung treffen würde. Eine solche Maßnahme würde meine Lebensqualität in keiner Weise beeinträchtigen.

Nun, die Sache ist: es gibt keine Freiheit ohne Recht und Ordnung. Überwinde Deine Vorstellung, dass Du etwas ganz Besonderes bist. Dein so außergewöhnliches Leben ist sehr gewöhnlich für diejenigen, die Dir Schaden zufügen wollen. Was die angeht, die mir Schaden zufügen wollen, da vertraue ich meinem "großen Bruder", dass er sich gut um mich kümmern wird.

[Auszüge aus Leserbriefen der Tageszeitung **The Wichita Eagle**]

Fig. B.8 continued

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